

**IN THE UNITED STATES DISTRICT COURT  
FOR THE MIDDLE DISTRICT OF PENNSYLVANIA**

UNITED STATES OF AMERICA,

and

COMMONWEALTH OF  
PENNSYLVANIA DEPARTMENT  
OF ENVIRONMENTAL  
PROTECTION

Plaintiffs,

and

LOWER SUSQUEHANNA  
RIVERKEEPER ASSOCIATION

Plaintiff-Intervenor-  
Applicant,

v.

CAPITAL REGION WATER,

and

THE CITY OF HARRISBURG, PA

Defendants.

Civil Action No. 1:15-cv-00291-CCC

(Judge Christopher C. Conner)

**EXHIBITS TO COMPLAINT IN INTERVENTION**

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# Exhibit A

**DECLARATION OF TED EVGENIADIS**

I, TED EVGENIADIS, state and affirm as follows:

1. I am over 18 years old and live in Mount Wolf, Pennsylvania. I am competent to testify in this matter and have personal knowledge of the facts set forth below.

2. I have been the Lower Susquehanna RIVERKEEPER® since April 2017. My job as Riverkeeper is to educate the public on current issues regarding the ecological integrity of the Lower Susquehanna Watershed and greater Chesapeake Bay, monitor the water quality and associated natural resources of the Susquehanna River and its tributaries, work with decision-makers to emphasize the economic and social benefits of protecting the Watershed, and when necessary, enforce laws protecting the Watershed's communities and natural resources. In this position, I work as an alliance builder, diplomat, and educator, but also, when the situation calls for it, an unrelenting defender and advocate of our right and the River's right to be healthy and prosperous. In addition, I utilize education, chemical and biological monitoring, pollution patrols, partnership building, public events, research and legal action to improve the health of the Susquehanna's waterways. I also assist the government by reporting non-compliance of the law and follows through where environmental protection agencies are unable to do their job due to politics or funding issues. My office address is 2098 Long Level Road in Wrightsville, Pennsylvania 17368.

3. I am also the Executive Director of the Lower Susquehanna Riverkeeper Association ("LSRA"), a grassroots, 501(c)(3) membership, mission-driven organization. In this capacity, I manage the day-to-day operations of the Lower Susquehanna Riverkeeper, including budgeting and writing grants to obtain funding. LSRA was specifically formed for the purpose of supporting the activities of the Lower Susquehanna Riverkeeper. The Association is dedicated to



improving and protecting the ecological integrity of the Susquehanna River Watershed and the greater Chesapeake Bay. LSRA and the Riverkeeper share the same office address.

4. I have also been a member of LSRA for the past eight years. Prior to joining LSRA in my current capacity as both the Riverkeeper and Executive Director, I assisted the previous Riverkeeper with many activities, such as cleanups and other events, macroinvertebrate and plant studies, and vegetation control.

5. As Lower Susquehanna Riverkeeper, I lead the Association's work on holding polluters in the Watershed accountable by identifying threats to water quality, enforcing clean water laws, and advocating for stronger regulations on pollution sources. To identify sources of pollution, I frequently engage in boat patrols and water sampling. My work is often done together with impacted community members, whether it be sharing information on new threats to mobilize the community or responding to tips or concerns from community members.

6. LSRA and its members, who include local residents, outdoorsmen, recreationalists, and families, are dedicated to preserving safe drinking water, the sustainable use of natural resources, and the ability to fish, swim, and recreate safely in the Susquehanna River and her tributaries. Our territory covers over 8,500 square miles of the Lower Susquehanna Watershed including the Juniata Watershed from Selinsgrove to the Chesapeake Bay at Havre de Grace. The Susquehanna River is the longest river on the East Coast of the United States and a very important tributary of the Chesapeake Bay, providing 90% of freshwater to the Upper Chesapeake Bay and 50% of the freshwater to the entire Bay Watershed.

7. The Lower Susquehanna Riverkeeper is a member of Waterkeepers Chesapeake, a coalition of seventeen independent Waterkeeper programs working to make the waters of the Chesapeake and Coastal Bays swimmable and fishable. The Lower Susquehanna Riverkeeper is

also a member of Waterkeeper Alliance, a global movement of on-the-water advocates who patrol and protect over 2.7 million square miles of rivers, streams, and coastlines in North and South America, Europe, Australia, Asia, and Africa.

8. Lower Susquehanna Riverkeeper's interests are harmed by the continuous dumping of raw sewage into the Susquehanna River by Harrisburg's combined sewer system and sanitary sewer system. This raw sewage contains viruses, bacteria, worms, and protozoa and can cause stomach flu, respiratory infections, and potentially life-threatening illnesses in humans when released without being treated, in addition to high levels of nitrogen and phosphorus that threaten aquatic life. The City of Harrisburg, Capital Region Water, PADEP, and EPA have not yet addressed this public health issue with a long-term solution. It is the mission of the Lower Susquehanna Riverkeeper Association to uphold the laws which protect our water to protect public health. These combined sewer overflows are hindering the pursuit of that mission.

9. The levels of *E. coli* and fecal coliform in the River from Harrisburg's antiquated sewer system are alarmingly high. Over the course of 2019 and 2020, LSRA monitored the bacteria levels of the waters in the Susquehanna River and Paxton Creek downstream of the City's combined sewage outfalls by collecting water samples and submitting these samples for testing at an independent laboratory, ALS Environmental of Middletown, PA. The results from this monitoring effort suggest that just one-tenth of an inch of rain will cause combined sewer overflows containing bacteria levels above and beyond the state standards for recreation. From June 15 to July 31, 2019, we collected samples that showed that *E. coli* levels along Harrisburg's waterfront averaged almost three times higher than levels considered safe for water-contact recreation. On seven of these days, *E. coli* concentrations were more than 10 times above safe levels, including areas just downstream of outfalls leading from the Governor's Residence and the Capitol Office Complex. Between June 5 and July 31, 2020, we collected 60 different water samples from three locations on

Harrisburg's riverfront, and the results showed that *E. coli* levels exceeded standards for safe swimming or water contact recreation in 20 out of these 60 samples (33 percent). In fact, the average *E. coli* level (610) was almost 2.5 times higher than safe levels.

10. Sewage overflows have been a prolonged issue in the City of Harrisburg. As the Riverkeeper, I focus on environmental justice as it relates to water pollution affecting our communities, especially underprivileged and underrepresented communities. The City of Harrisburg suffers from poverty with a median household income of roughly \$32,000 and is largely comprised of communities of color, with over 75% of the population identifying as black, Hispanic, Latino or Asian. These residents and those who swim, fish, and otherwise recreate in these waters deserve a cleaner Susquehanna River free from raw sewage and unsafe bacteria levels that can cause illness or death. The people of Harrisburg are being disenfranchised by the responsible parties' continued delay in reaching a final consent decree that would reduce combined sewer overflows as effectively and expeditiously as possible.

11. If LSRA is granted intervention, it will give LSRA and its members a voice in these negotiations. LSRA's efforts to reduce pollution from the City of Harrisburg into the Lower Susquehanna Watershed is paramount to our mission to protecting these waterways and the City's residents and visitors who intend to enjoy the Susquehanna for its angling, recreational, and leisurely opportunities. As Harrisburg is the biggest contributor of combined sewer overflows in the entire Chesapeake Bay Watershed, it is time to stop those illicit discharges and to allow the residents and visitors of Harrisburg to finally enjoy the use of these waterways without the fear of getting ill.

12. On a personal level, I enjoy fishing and often fish both upstream and downstream of Harrisburg and its combined sewer outfalls. In the past five years, I have noticed an excessive amount of algae in the waters downstream of the Harrisburg sewage plant and outfalls. This has had a tremendously terrible effect on my ability to fish. From my experience fishing throughout

the different sections of the Susquehanna River, I have observed a decline in the population of adult smallmouth bass in the areas downstream of the Harrisburg sewage plant and its outfalls compared to the areas upstream over the past five years. I am not able to enjoy fishing in the areas downstream of Harrisburg as much as I used to.

13. In addition, I have personally observed raw sewage and toilet paper floating near the mouths of the City's combined sewer outfalls. Knowing that the Susquehanna River contains unsafe levels of bacteria, I worry about my own health and the health of family, friends, and other residents and visitors of the City when they recreate on or near the waterways. If the pollution from the Harrisburg sewage system were reduced, my ability to enjoy the River would also improve.

I declare under penalty of perjury that, to the best of my knowledge, the foregoing is true and correct. Executed this 1 day of February 2021, in Wrightsville, Pennsylvania.

A handwritten signature in black ink, appearing to read 'TedE', is positioned above a horizontal line.

Ted Evgeniadis – Lower Susquehanna Riverkeeper

# Exhibit B

### **DECLARATION OF ILYSE KAZAR**

I, ILYSE KAZAR, declare and state as follows:

1. I am over 18 years old and live in Harrisburg, Pennsylvania. I am competent to testify in this matter and have personal knowledge of the facts set forth below.

2. I have been a member of the Lower Susquehanna Riverkeeper Association (“LSRA”) since 2019. I make annual donations to LSRA, and made my last donation in May 2020. In addition to supporting LSRA financially, I also volunteer my time to activities in support of LSRA’s mission. For instance, I helped the Lower Susquehanna Riverkeeper gather water samples from locations on the Susquehanna River downstream of Harrisburg’s combined sewer system in the summer of 2019 and from locations on Paxton Creek downstream of combined sewer outfalls in the summer of 2020. I then brought the samples to an independent lab to be tested for fecal coliform and *E.coli*. I also designed spreadsheets used by LSRA to collect data to monitor the health of the waterways in the Lower Susquehanna Watershed.

3. I support LSRA because its mission—to protect and improve the ecological and aesthetic integrity of the Lower Susquehanna Watershed—resonates with me.

4. I live less than a five-minute walk from the Susquehanna River and about a six-minute walk from Paxton Creek, in an area downstream of the City’s combined sewer outfalls.

5. I derive aesthetic value from the Susquehanna River. It is important that I take regular walks for medical purposes and for my mental health, and I enjoy walking on paths along the River. During my walks this past summer, I often saw brown, fuzzy, raw sewage collecting on the banks of the Susquehanna River. I also saw a horrific scene of sewage, dead fish, dead crawfish, and brown scum on the banks of the River near the State Capitol.

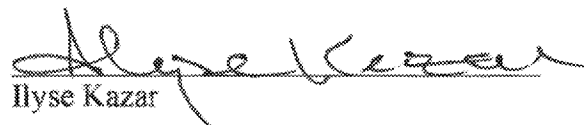
6. From my volunteer work at LSRA, I know that the areas of the Susquehanna River and Paxton Creek where I take walks contain unsafe levels of bacteria. With this knowledge, I never let my dogs go into the water because I am scared that they will get sick. I also avoid coming into contact with the water.

7. Knowing that the fish may be contaminated, I find it extremely distressing when I see people, especially children, fishing in the Susquehanna River. I worry that they may eat their catch and may get sick from it. Whenever I see people fishing, I warn them against eating the fish they catch from the River.

8. From my involvement with LSRA, I also understand that Capital Region Water is letting untreated sewage into the waterways. Knowing that Capital Region Water continues to dump raw sewage into Susquehanna River and Paxton Creek diminishes my aesthetic and recreational experiences. My enjoyment of the River would vastly increase if the problem was addressed, because I would see less raw sewage in the River and I would know that the health of the River was improving. If the problem was fixed, I would let my dogs go into the River during our walks. I would also dip my feet in or wade in the River myself and consider eating the fish.

9. LSRA represents my interests in seeking to bring Capital Region Water into compliance with state and federal laws. The resolution of this case in favor of LSRA will protect my interests and redress my injuries.

I declare under penalty of perjury that, to the best of my knowledge, the foregoing is true and correct. Executed this 22<sup>nd</sup> day of January 2021, in Harrisburg Pennsylvania.

  
Ilyse Kazar

# Exhibit C



### **DECLARATION OF ROD BATES**

I, ROD BATES, declare and state as follows:

1. I am over 18 years old and live in Landisburg, Pennsylvania. I am competent to testify in this matter and have personal knowledge of the facts set forth below.
2. I have been a member of the Lower Susquehanna Riverkeeper Association ("LSRA") for two years. I donate to LSRA on a regular basis and made my last donation in December 2020. As a member, I report problems to LSRA whenever I observe any pollution in the Lower Susquehanna Watershed, go on boating trips with the Lower Susquehanna Riverkeeper to perform visual inspections for pollution, and survey anglers and fishers about their use of the River and what they observe.
2. I boat and fish on the Susquehanna River both upstream and downstream of the Harrisburg sewage treatment plant and combined sewer outfalls. I am out boating and fishing on the River and its tributaries, about 150 days per year.
3. The Susquehanna River is very important to me. I own a fishing guide business named "Koinonia Guide Service," which I started in 1999. I established Koinonia Guide Service to provide visitors a safe, educational, productive and memorable experience by sharing the Susquehanna River with them. To accomplish this goal, professional guides, including myself, take clients boating and fishing on the River. We provide our clients fishing rods, tackle, safety vests, and training to catch fish during these trips.
4. Outside of my fishing guide business, I also enjoy fishing with my family. For instance, I have two grandsons and I recently took my three-year old grandson fishing at the edge of the Susquehanna River. It was a very meaningful experience to teach my grandson how to fish and I look forward to sharing the same experience with my younger grandson once he is older.

5. I understand that Capital Region Water owns and operates the City of Harrisburg's combined sewage outfalls, which are illegally discharging raw sewage into the Susquehanna River and Paxton Creek. I also understand that raw sewage contains high levels of nitrogen and phosphorus, which exacerbates the growth of algae and can suffocate fish, as well as high levels of bacteria.

6. My fishing trips often take me right past the mouth of these combined sewage outfalls. I often see and smell sewage when I boat near these outfalls after rain events. I have noticed a serious decline in the density of smallmouth bass downstream of these outfalls over the past Four years. When I do catch smallmouth bass, I notice that more and more of them are sick with "Blotchy Bass" syndrome (which are dark spots covering the skin of the fish), lesions, or tail rot.

7. I worry about how the decline in the health and population of smallmouth bass will affect my fishing guide business. I also worry that the sewage pollution will scare away customers from booking fishing trips with my business. We have many grandparents that enjoy taking their grandchildren on our fishing trips, but now I warn clients about the potential health risks of playing in the river and I provide clients with sanitizer and hand wipes in case they come into contact with the water.


8. Personally, I very rarely eat the fish I catch from the areas downstream of Harrisburg because of the amount of sewage pollution that is illegally dumped into the river. I also feel that the health of the people who get drinking water from the river and who recreate on the river can be negatively affected by this pollution.

9. If Capital Region Water made infrastructure improvements and stopped its discharges of raw sewage, I would worry less about the health of the river and the fish within it,

as well as how the pollution is affecting my business and the health of the residents in PA. I would also feel less anxious about bringing my grandson to the River to fish and start to bring him fishing more often than if the problem were not fixed. Knowing that this source of pollution had been addressed and eliminated would make me feel much better about the future of the River.

10. LSRA represents my interests in seeking to bring Capital Region Water into compliance. The resolution of this case in favor of LSRA will protect my interests and redress my injuries.

I declare under penalty of perjury that, to the best of my knowledge, the foregoing is true and correct. Executed this 25<sup>th</sup> day of January 2021, in Coenisho, Pennsylvania.



Rod Bates

# Exhibit D

# Sewage Overflows in Pennsylvania's Capital

*Harrisburg's chronic releases of sewage mixed with stormwater are an example of PA's failure to address water quality*



## ACKNOWLEDGEMENTS

This report was researched and written by Mariah Lamm, Lisa Hallowell, Abel Russ, and Tom Pelton of the Environmental Integrity Project. Water monitoring by the Lower Susquehanna Riverkeeper, Ted Evgeniadis and Ilyse Kazar.

Thanks to The Keith Campbell Foundation for the Environment for its financial support. And thanks to Capital Region Water for meeting with EIP's researchers and sharing documents and information for this report.

## THE ENVIRONMENTAL INTEGRITY PROJECT

The Environmental Integrity Project (<http://www.environmentalintegrity.org>) is a nonpartisan, nonprofit organization established in March of 2002 by former EPA enforcement attorneys to advocate for effective enforcement of environmental laws. EIP has three goals: 1) to provide objective analyses of how the failure to enforce or implement environmental laws increases pollution and affects public health; 2) to hold federal and state agencies, as well as individual corporations, accountable for failing to enforce or comply with environmental laws; and 3) to help local communities obtain the protection of environmental laws.

For questions about this report, please contact EIP Director of Communications Tom Pelton at (202) 888-2703 or [tpelton@environmentalintegrity.org](mailto:tpelton@environmentalintegrity.org).

## PHOTOS:

Cover: Photo of sewer along the Susquehanna River in Harrisburg by Tom Pelton. Other photos: Tom Pelton, EIP and Wikimedia Commons.

# Sewage Overflows in Pennsylvania's Capital

## Executive Summary

**A**mong Chesapeake Bay region states, Pennsylvania is both the largest source of water pollution<sup>1</sup> and the state that has done the least to achieve regional goals for restoring the health of the nation's largest estuary, according to the Environmental Protection Agency.<sup>2</sup> But the Keystone State's impact on downstream neighbors is less relevant to Pennsylvania residents than the reality of the chronic contamination of local waterways that the Commonwealth's citizens can no longer enjoy for swimming, fishing, and other forms of recreation.

A politically significant example in is the state capital, Harrisburg, which last year released almost 1.4 billion gallons of mixed sewage and stormwater, a near record, into the Susquehanna River, the Bay's largest tributary, according to a report from Capital Region Water.<sup>3</sup> Harrisburg boasts a beautiful waterfront park, riverwalk, and public beach. But water sampling by the Environmental Integrity Project and Lower Susquehanna Riverkeeper in the summer of 2019 found *E coli* bacteria levels along the city's waterfront averaging almost three times higher than would be safe for swimming or water-contact recreation.<sup>4</sup> Of the 60 water samples analyzed from June 15 to July 31, 2019, almost half (29) violated health standards. Seven samples showed *E coli* levels more than 10 times safe levels, including on City Island Park beach, and along the riverwalk just downstream from outfalls leading from the Governor's Residence and the Capitol Office Complex.

The underlying problem is Harrisburg's neglected and antiquated sewer system, which combines sewage and stormwater and intentionally pipes raw human feces and urine



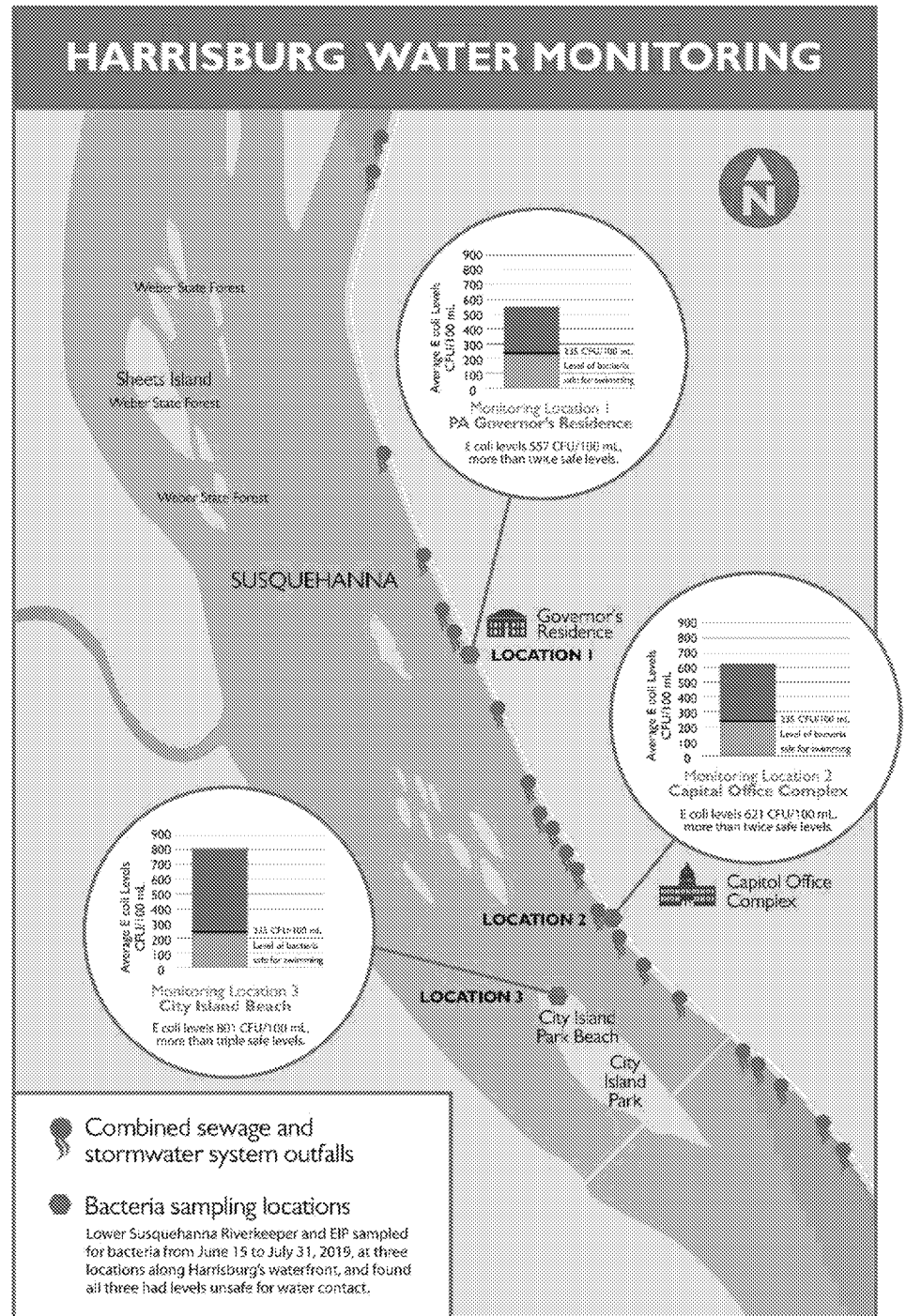
*Lower Susquehanna Riverkeeper Ted Evgeniadis taking a water sample at City Island Park beach in Harrisburg. Sampling found levels of fecal bacteria several times higher than would be safe for water contact.*

directly into local rivers and streams whenever it rains. Harrisburg has one of the largest of 31 combined sewage and stormwater systems in Pennsylvania's section of the Chesapeake Bay watershed.<sup>5</sup> That is more than triple the number of cities with these primitive sewer systems in any other state in the Bay region. Overall, Pennsylvania's cities and towns with combined sewer and stormwater systems release an average of 26 billion gallons of mixed sewage and stormwater into local waterways in a typical

year, according to EPA.<sup>6</sup> This waste contains, depending on estimates, between 1.3 million and 2.6 million pounds of nitrogen and 220,000 and 278,000 pounds of phosphorus annually.<sup>7</sup> In a typical year, Harrisburg and the six surrounding suburbs served by the Capital Region Water authority release about 789 million gallons of mixed sewage and stormwater into the Susquehanna River, according to reports by the Capital Region Water.<sup>8</sup> In 2017, the amount released was 899 million gallons.<sup>9</sup>

This is only a small portion of Pennsylvania's pollution entering the Bay. But the sewage contains pathogens that have a major impact on local water quality and can make people sick if they come into contact with it. According to EPA, raw sewage harbors viruses, bacteria, worms, and protozoa, and can cause diseases in people including stomach flu, respiratory infections, and potentially life-threatening illnesses such as dysentery and Hepatitis B.<sup>10</sup> The nitrogen and phosphorus in the waste also contribute to algal blooms and low-oxygen dead-zones that harm fish and other aquatic life.

In response to chronic violations of the federal Clean Water Act, the Pennsylvania Department of





Environmental Protection (DEP) and EPA in 2015 signed a consent decree with Harrisburg's water authority meant to address the sewage issue.<sup>11</sup> However, the agreement was only a "partial" consent decree – meaning it did not fully solve the problem.<sup>12</sup> Since then, DEP and EPA have taken a passive approach with Harrisburg, failing to penalize about 80 percent (105 of 131) of the self-reported sewage discharge violations by Capital Region Water from 2015 through 2018, according to DEP records.<sup>13</sup>

The 2015 sewage agreement did not impose any penalties on Harrisburg or any requirements that the local water authority close any sewage outfalls, or invest in underground storage tanks to contain overflows during rains. This made the Harrisburg consent decree unlike sewage control agreements EPA signed with other regional cities with antiquated pipes that mix sewage and stormwater, such as Scranton, Pa., Washington D.C., and Arlington, Va. Harrisburg's agreement does not require the city to stop all sewage releases by a certain date, or conduct any testing for bacteria along the city's waterfront to make sure pollution control efforts work. Instead, Harrisburg's agreement requires its Capital Region Water authority to merely develop a long-term plan to reduce (but not eliminate) combined sewage overflows.

The Capital Region Water authority's plan,<sup>14</sup> released in 2018, proposes that Harrisburg area ratepayers pay \$315 million over 20 years to improve the maintenance of the existing combined sewage and stormwater pipes, upgrade a pumping plant, improve outfall regulation devices, as well as plant trees and rain gardens and create other "green infrastructure" to help soak up rainwater.<sup>15</sup> In theory, the results are supposed to reduce the amount of sewage mixed with stormwater flowing into the Susquehanna River by a little more than half, from an average of about 800 million gallons a year now, down to at least 332 million gallons annually.<sup>16</sup> It is unclear whether Harrisburg's plan will work, however, or whether it will be enough to reduce bacteria levels to the point that Harrisburg's waterfront will be "swimmable" again, which is what the federal Clean Water Act requires. If the plan falls short, area residents may end up paying too much for a solution that doesn't fix the problem.



*Children often play along the waterfront at Harrisburg's City Island Park beach, even though the water is closed because of high bacteria levels. Tyler Lowery, 26, said he's frustrated that his children can't swim because of all the pollution. "I swam here when I was a child. It'd be nice if my kids could swim here, too."*

There is no question that "green infrastructure" should be seen as an important part of any city's efforts to control its stormwater runoff pollution. Capital Region Water should be applauded for incorporating more trees, green roofs, and rain gardens into its plans for Harrisburg. However, "green infrastructure" is a necessary but not sufficient step. Planting

trees and installing rain gardens should be done in addition to, and not as a complete substitution for, fixing the underlying problem of pipes that are designed to funnel human waste directly into public waterways. All local residents would enjoy an expansion of parks and green spaces in Harrisburg. But the city's plan should be designed to achieve explicit water quality goals that include eliminating dangerous bacteria levels that make the Susquehanna unsafe for swimming and water-contact recreation. A greening of the urban landscape should not be a replacement for improvements to infrastructure and regular bacteria monitoring along the waterfront to make sure that pollution control activities actually work, and that bacteria concentrations in the river actually decline.

The continued sewage overflows in Harrisburg – and the state's failure to fix the problem – are symbolic of a larger failure of Pennsylvania's elected officials to address water quality problems. This is because the overflows include untreated human waste from the Governor's Residence, located on the banks of the Susquehanna, and from the nearby Pennsylvania State Capitol Complex. One outfall immediately downstream from the Governor's Residence, for example, overflowed into the Susquehanna River 64 times last year – more than once a week – releasing more than 9 million gallons of sewage mixed with stormwater into the waterway.<sup>17</sup> That outfall, like all 58 of the combined outfalls in the city, was built with a dam-like structure that, during dry conditions, is designed to divert the flow of wastewater into a pipe that leads to the Harrisburg's sewage treatment plant. However, because rain frequently overwhelms the system, that device worked to contain only 47 percent of the sewage and stormwater last year. That meant that a majority (53 percent) of the mixed sewage and wastewater from this part of the city poured directly, without any treatment or filtration, into the Susquehanna River, according to a report by the Capital Region Water authority.<sup>18</sup>

Downstream from the outfall pipe near the governor's mansion is Harrisburg's only public swimming area – the City Island Park beach – which is closed because of unhealthy bacteria levels. Neither the city, regional water authority, or the state monitors bacteria levels in the river regularly, despite the frequent sewage overflows, with no government testing the last three years.

To fill this gap in monitoring information, the Environmental Integrity Project worked with the Lower Susquehanna Riverkeeper to conduct sampling for bacteria from June 15, 2019, through July 31, of this year, with testing performed by an independent laboratory.<sup>19</sup> The 60 water samples showed that bacteria concentrations in the river along the city's waterfront were consistently higher than is safe for swimming or water contact recreation. In terms of averages, on City Island Park beach, bacteria levels averaged 801 CFU/100 ml water, more than triple the state's swimming water standard of 235/100 ml.<sup>20</sup> Just downstream from the combined sewage outfalls leading from Governor's Residence beside the Susquehanna River, bacteria concentrations averaged 557 CFU/100 ml of water, more than double the health standard.<sup>21</sup> Downstream from the outfalls leading from the State Office Complex, bacteria levels averaged 621 CFU/100 ml – again, more than double safe levels.<sup>22</sup>

To solve this ongoing sewage problem, at some point in the next few years, EPA and DEP are expected to enter into a final consent decree with the Harrisburg Capital Region Water authority. When this happens, the Environmental Integrity Project urges the federal and

state agencies to significantly strengthen their agreement with the water authority in the following ways:

- 1) EPA and the DEP should require the Harrisburg Capital Region Water authority to show how its long term plan will demonstrably reduce fecal bacteria levels in the Susquehanna River and allow the public to again use the waterfront for swimming, boating, and fishing.
- 2) If Harrisburg's plan cannot reduce bacteria levels, EPA and DEP should require Capital Region Water to do more to fix the underlying plumbing problem, such as by building underground storage tunnels to temporarily hold waste during storms before treatment. Such tunnels are already being built by Alexandria, Va., and Washington D.C., and are expected to reduce sewage and stormwater overflows by more than 90 percent in these cities. That's far more than the 60 percent reduction proposed in Harrisburg at a cost of \$315 million.
- 3) Because Harrisburg is the state capital and almost half of the land in the city is owned by state agencies – which pay no taxes – Pennsylvania should commit to paying most of the cost of improving Harrisburg's infrastructure and reducing the flow of sewage into the Susquehanna River.
- 4) State and federal regulators should mandate regular testing for bacteria along Harrisburg's riverfront and at City Island Park beach to determine whether the investments being initiated by Capital Region Water actually reduce the flow of sewage into the river. Without verification, it will be impossible to know whether additional steps are needed.
- 5) The state and federal agencies should enforce a consent decree requirement that Capital Region Water notify the media and general public whenever a combined sewage overflow occurs. Such notifications to the news media are not happening today, according to CRW.<sup>23</sup> Public awareness of the problem will help local residents protect their health and understand the need for investments.
- 6) EPA and the state should encourage stormwater control systems such as rain gardens, tree plantings, and green roofs. But this green infrastructure should be deployed in combination with sewer system upgrades to end the outdated piping of raw human waste directly into the Susquehanna River.
- 7) DEP and EPA should officially designate the Susquehanna River around Harrisburg as impaired for fecal bacteria under the federal Clean Water Act. This would force Pennsylvania to develop and follow a cleanup plan (a "Total Maximum Daily Load") to solve the sewage overflow problem.
- 8) Harrisburg and the other cities in Pennsylvania with combined sewage and stormwater systems should factor into their planning the increased amount of rainfall already deluging the region because of climate change. Failing to calibrate planning for the growing intensity of rainfall may mean that any designs will be overwhelmed.

Pennsylvania's state capital boasts a scenic waterfront that is graced by a public riverwalk, stunning bridges, a gardened island park, and a beach and Victorian-era bathhouse. The beach, however, is closed because of high bacteria levels in the water. The value of all these waterfront treasures is diminished by the raw sewage that continues to be piped directly into the river, including from the Governor's Residence and the State Capitol Complex buildings when state officials flush their toilets. For the sake of Pennsylvania's pride and local water quality, state leaders should dedicate enough state funding to modernize Harrisburg's primitive plumbing system and transform the city into a showcase for the Keystone State's commitment to clean water.

## The Big Picture: PA Neglecting Water Quality

The fact that Pennsylvania's government has not solved such a serious water pollution problem on its own doorstep is an example of how the Keystone State has fallen short on water quality issues. In EPA's 2018 midpoint assessment of progress in a plan to improve the Chesapeake Bay by 2025 (called the Chesapeake Bay "Total Maximum Daily Load" or TMDL), the federal agency singled out Pennsylvania for being "significantly off track" to meet nutrient reduction goals. Between 2010 and 2018, the Pennsylvania achieved only 18 percent of its nitrogen pollution reduction targets, instead of the 60 percent it was supposed to achieve by that date.<sup>24</sup> This failure on Pennsylvania's part is particularly problematic because the state is responsible for about 44 percent of the nitrogen pollution that is choking the nation's largest estuary -- far more than any other state and almost twice Maryland's 20 percent.<sup>25</sup>

Governors and lawmakers have cut the budget of the state Department of Environmental Protection substantially over the last decade, with funding for key pollution control programs cut by 26 percent from fiscal 2008 to 2016, according to state budget figures.<sup>26</sup> In Pennsylvania's portion of the Chesapeake Bay watershed, only about 4 percent (7 of 189) of the large- to medium-sized municipal sewage treatment plants have been upgraded to the highest level, with enhanced nutrient removal systems, according to EPA data.<sup>27</sup> (This means they discharge less than 3 mg/liter nitrogen and .3 mg/liter dissolved phosphorus.) By contrast, in Maryland, 63 of the 67 largest sewage plants have been upgraded to this level.<sup>28</sup> In Virginia, about 44 percent (40 of 90) of its large municipal sewage plants have been upgraded to similar standards.<sup>29</sup> Washington DC's one sewage plant -- Blue Plains, bay's region's largest -- has been upgraded to the enhanced level.

In the area of controlling runoff pollution from farms, about a third of Pennsylvania farms still do not have manure management plans that were required by law more than three decades ago.<sup>30</sup> And the Pennsylvania General Assembly in 1980 actually made it illegal for state or local officials to require farmers to fence their cows out of streams, although this is widely recognized as a standard practice to stop a significant source of water pollution.

## Clean Water Act Enforcement Efforts in Harrisburg

Because of Harrisburg's chronic sewage discharges into the Susquehanna River, EPA and the state filed a federal Clean Water Act lawsuit<sup>31</sup> in February of 2015 against Capital

Region Water. CRW is an independent municipal water authority that runs the sewer and water systems for Harrisburg itself, which has a population of about 49,000, as well as portions of surrounding municipalities (the Penbrook, Paxtang, and Steelton boroughs, along with Susquehanna, Swatara and Lower Paxton townships.) The authority serves a total of about 120,000 people in all of these communities, about 75 percent of whom have combined sewage and stormwater systems, some of which date back a century or more and have been badly neglected over time. The authority also runs a regional sewage treatment plant south of the city on the Susquehanna River.

The 2015 consent decree between EPA and CRW failed to require that the authority, Harrisburg, or any of the other local municipalities pay penalties for years of past violations of the federal Clean Water Act by releasing sewage into the Susquehanna River. The decree also fails to require CRW and the communities stop violating the Clean Water Act and the pollution control requirements in their permit. In fact, the opposite is true. The 2015 consent decree, instead, acknowledges that Harrisburg has financial troubles and, as a result, only had to sign a lenient



*The water pollution control permit for Harrisburg's sewage treatment plant expired on December 31, 2014. Capital Region Water, which operates and has upgraded the plant, submitted a renewal application to the state, but the state has yet to renew the permit.*

“partial” consent decree. The parties to the agreement admit that the decree “does not resolve any claims the plaintiffs (EPA and DEP) have,” and does not even include the defendant’s admission of violating the Clean Water Act or the terms of their pollution discharge permit. Furthermore, although the partial consent decree does require defendants to take certain steps aimed at future compliance with the law, it fails to establish concrete deadlines or even timelines for CRW to come into compliance with the law for many items.

In terms of what the 2015 consent decree does require, the agreement mandates that CRW and Harrisburg perform many specified future tasks aimed at resolving legal violations. These include:

- Prohibiting dry weather sewage overflows from combined sewage and stormwater outfalls;
- Prohibiting sewage overflows of all kinds from the roughly 25 percent of the Harrisburg area that has separate sewage and stormwater pipes;

- Requiring the creation of a “long term control plan” with schedules, deadlines, and timetables for remedial measures required to minimize the impacts of combined sewage and stormwater overflows on local waterways and bring all sewage outfall points into compliance with the federal Clean Water Act’s technology-based pollution limits and water quality-based limits;
- Requiring public notification of combined sewage and stormwater overflows;
- Mandating an updated Clean Water Act permit for the city’s sewage treatment plant, and compliance with those permit limits.

Since the consent decree was signed in 2015, DEP and EPA have imposed \$22,500 in fines on Capital Region Water for 29 violations of its consent decree or sewage plant permit.<sup>32</sup> Three of which were for permit violations at the Harrisburg sewage treatment plant for exceeding ammonia limits.

Overall, Capital Region Water was penalized for only about 20 percent of its self-reported violations from 2015 to 2018 and fined only a small fraction of the penalties that could have been imposed.<sup>33</sup> CRW self-reported 131 illegal sewage incidents during this time period, compared to the 29 for which it was penalized. Under the terms of the consent decree, the water and sewer authority could have been fined \$500 to \$10,000 per incident, depending on the volume.<sup>34</sup>

Specifically, CRW reported 62 dry weather overflow incidents from combined sewage and stormwater lines – under the terms of the consent decree, all illegal – between 2015 and 2018, including 28 in 2018, 7 in 2017, 23 in 2016, and 4 in 2015.<sup>35</sup> On top of this, the agency also reported overflows from the sanitary sewer lines in the part of the city that has separate sewage and stormwater lines. In this category, the agency reported 69 illegal sewage overflow incidents from sewer pipes during this time period, including 18 in 2018, 10 in 2017, 13 in 2016, and 28 in 2015. Of these 131 illegal sewage incidents, only 26 (or about 20 percent) resulted in penalties from the state or federal agencies.

| Harrisburg Sewage Discharges  | 2015    | 2016     | 2017     | 2018        |
|---|---------|----------|----------|-------------|
| Volume of sewage mixed with stormwater released during wet weather (gallons)          | 11 mil. | 789 mil. | 899 mil. | 1.4 billion |
| Number of incidents of sewage and stormwater pipes releasing waste during wet weather | 2,813   | 2,753    | 2,466    | 3,188       |
| Inches of rain (annual)   | 40.6    | 40.3     | 43.9     | 66.8        |
| Number of dry weather overflow incidents from combined sewage and stormwater pipes    | 4       | 23       | 7        | 28          |
| Dry weather overflow volume (gallons)   | 69,346  | 62,980   | 3,811    | 77,727      |
| Dry weather overflows caused by blockages   | 75%     | 48%      | 29%      | 39%         |
| Number of overflows of sewer lines and other unauthorized discharges of raw sewage *  | 28      | 13       | 10       | 18          |

Source: Capital Region Water semi-annual reports. \* Volume of sanitary sewer overflows frequently not reported.

The big picture is that, since the Capitol Region Water signed the partial consent decree in 2015 to improve the sewage overflow problem, neither the volume nor the frequency of sewage overflows in Harrisburg has decreased, according to the agency’s semi-annual

reports to the state and federal governments.<sup>36</sup> This suggests that the actions the agency has taken so far are not solving the problem.

While it is true that in 2018 Harrisburg suffered the second highest rainfall on record (nearly 67 inches), which would explain the high volume of sewage combined with stormwater released that year, the total number of *dry weather overflow* incidents, which should not be impacted by rain, also increased last year, from seven in 2017 to 28 in 2018, according to water authority reports.<sup>37</sup> CRW's chief engineer reported that some of the repairs that the agency is making to the sewer and stormwater lines is knocking debris and sediment into the pipes and causing blockages and overflows downstream.<sup>38</sup> From January to July of 2019, Harrisburg has experienced about 30 inches of rainfall.<sup>39</sup> If this trend continues for the remainder of the 2019, the region is on track to match the previous year's near-record rainfall total<sup>40</sup> meaning that, again, far more sewage and stormwater than the historic average may be released.

## Comparison to Other Cities in the Chesapeake Bay Watershed

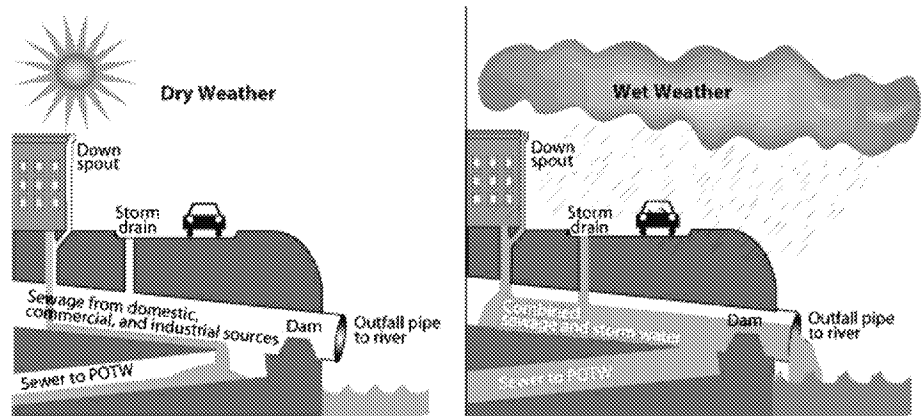
In many ways, EPA and DEP's 2015 consent decree with Harrisburg is weaker and more limited than agreements that the agency has signed with other old cities in the Chesapeake Bay watershed to reduce the sewage discharges from combined sewage and stormwater systems.

For example, Williamsport, Pennsylvania, in 2010, signed a consent decree with EPA that imposed a \$320,000 penalty, in contrast to the zero penalty imposed on Harrisburg with its partial consent decree. The Williamsport agreement also gives the city a firm deadline for – among other things – building a new underground containment tank for controlling combined sewage and stormwater overflows during rain events.

In 2012, Scranton signed a consent decree with EPA and DEP that imposed a \$340,000 penalty<sup>41</sup> and required Scranton to establish a schedule for building about \$140 million of improvements to plumbing and infrastructure, including combined sewage overflow tanks and upgrades to the sewage plant. Scranton's consent decree limits the city to no more than nine overflow events a year into the Lackawanna River (unlike Harrisburg's agreement, which sets no such limits on combined overflows). Scranton had been releasing about 700 million gallons of combined sewage and stormwater per year into the Lackawanna River, only slightly less than Harrisburg.

Outside of Pennsylvania, cities with old combined sewage and stormwater systems, including Alexandria, Virginia, and Washington D.C. – which both release less sewage than Harrisburg – built or are building underground storage tanks to reduce their combined sewage overflows by more than 90 percent. By contrast, Harrisburg's proposed plan would reduce its combined sewage overflows by an annual average of only 60 percent.

In Alexandria, Virginia, the problem of a more than a century-old combined sewage and stormwater system is being solved through a massive construction project that will cost roughly \$500 million.<sup>42</sup> The effort will feature a 19-foot-wide, two-mile-long tunnel system that will be 100 feet underground, and is expected to reduce sewage and stormwater overflows by 90 percent.<sup>43</sup> Alexandria has been spilling 140 million gallons of sewage mixed with stormwater a year – less than a fifth as much as Harrisburg, Pa. Virginia lawmakers mandated that Alexandria build the tunnels, giving the city a deadline of 2025 to finish the project. Construction is scheduled to start in 2021.



*An EPA illustration of how combined sewage and stormwater systems work. On dry days, sewage is piped to sewage treatment plants (Publicly Owned Treatment Works, or POTW). On rainy days, the sewage mixes with stormwater and is discharged into a nearby waterway.*

Washington, D.C., has a combined sewage and stormwater system that covers about a third of the city. Under the terms of a 2005 consent order with EPA, DC Water is building a massive series of underground tunnels – already partially completed – as part of a \$2.6 billion project to collect overflows so they can be treated before being released to the Potomac River. Yet Washington’s problem is smaller than Harrisburg’s, with an average of 654 million gallons of combined sewage overflows from DC annually, according to DC Water.<sup>44</sup> The controls in Washington DC are estimated to reduce combined sewage overflows into the Potomac River by 93 percent by volume and reduce their frequency from approximately 74 events to 4 events in an average year, according to DC water.<sup>45</sup>

In Richmond, back in 1990, the city built a 50 million gallon combined sewage retention facility and later a 6.7 million gallon storage tunnel (investing \$463 million) to capture and store sewage and stormwater overflows for later treatment in a sewage plant.<sup>46</sup> An EPA report indicates the storage tunnel and tank have significantly improved water quality of the James River, reducing the city’s average annual overflows from 3 billion gallons a year to 1.8 billion.<sup>47</sup>

## The Plan in Harrisburg

In comparison, Harrisburg is planning a much more limited and low-cost program, and one that emphasizes alternatives to tank construction projects, according to its long term control plan, titled the “City Beautiful H2O Plan.”<sup>48</sup>

The city’s goal, as expressed in the plan, is not to end sewage overflows into the Susquehanna River, but to “reduce combined and sanitary sewer overflows” through

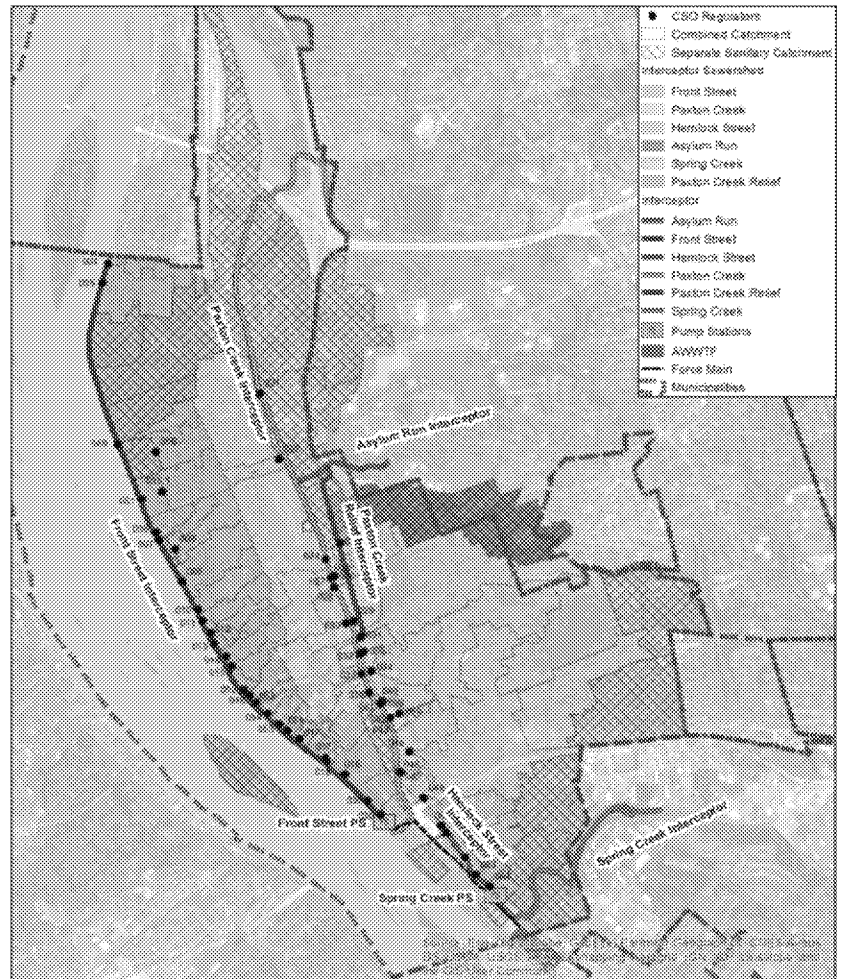


improved maintenance of the long-neglected combined sewer and stormwater system. Capital Region Water also plans to build a stronger pumping station, install stormwater control systems (called “green infrastructure”) on city streets, and make adjustments to the existing sewage outfall devices to reduce discharges. When all of this is complete, the water authority projects that the total amount of sewage and stormwater released into the Susquehanna River would be reduced by about 60 percent.<sup>49</sup>

Capital Region Water estimates that the program cost would be about \$315 million over 20 years. The water authority says that ratepayers can’t afford a more aggressive project – like those being built by Alexandria, Virginia, and Washington, D.C. – because Harrisburg is too poor. “32 percent of the population is living below the poverty level, which is more than double the national, state and county poverty levels,” the City Beautiful H2O plan explains. “The median household income of \$33,289 (in Harrisburg in 2015) is more than \$20,000 lower than that of the national, state, and county.”

David Stewart, Director of Engineering at Capital Region Water, said: “One of the challenges that we face in the city of Harrisburg is that we have an extremely financially challenged rate base. So as we went through the program, we realized that getting to the level of control that would be ideal is going to be financially prohibitive. So we looked at the best we could do.”<sup>50</sup>

However, this calculation of poverty for the Capital Region Water rate base is slightly misleading. The household income figure is only based on the city of Harrisburg – not the surrounding suburbs that the authority also serves, including Paxtang, Penbrook, and Steelton boroughs, as well as Swatara and Lower Paxton townships. Swatara Township, for example, has a median household income of \$59,341 per year – almost 80 percent higher than Harrisburg’s.<sup>51</sup> The concerns about the funding base also do not take into account the dominating presence of the Pennsylvania state government in Harrisburg, with the state owning 42 percent of the land in Harrisburg and boasting a \$34 billion annual state budget.



*The locations of combined sewage and stormwater outfalls in Harrisburg are shown on the map above as black circles, and the largest pipes (“interceptors”) as colored lines.*

Officials at Capital Region Water said they had not yet asked the state government for funding for their sewage control proposal, but plan to start moving in that direction. Starting in January 2020, the water authority is planning to start imposing stormwater pollution control fees – also known as “impervious surface” fees – on all rate payers, including state agencies, based on how many square feet they have of parking lots, roofs, or blacktop.<sup>52</sup> For the average home owner in the Harrisburg area, the annual fees would average about \$74 per year.<sup>53</sup> For owners of larger homes, as well as commercial properties, the fee would be \$6.15 per 1,000 square feet of hard surface per month.<sup>54</sup> On June 26, CRW opened a 90-day public comment period on the proposed stormwater control fees that will run through Sept. 25.<sup>55</sup> The next public hearing on the plan is scheduled for 6 pm on September 12 at Cloverly Heights Park, at 18th and Pemberton Streets in Harrisburg.<sup>56</sup>



It's not yet clear how much those fees would generate from state agencies, and an inquiry to the state DEP about how much the state would be willing to pay did not produce an answer.<sup>57</sup>

*David Stewart, Director of Engineering at Capital Region Water, said Harrisburg has limited resources and faces serious financial challenges in trying to reduce combined sewage overflows.*

Capital Region Water is proposing several projects to address the sewage issue in Harrisburg, according to David Stewart, the agency's Director of Engineering. CRW plans to spend about \$12 million in upgrades to a sewage pumping station, located under I-83 near the river, on the south end of the city. This will provide more pumping force to drive sewage and rainwater during storms into the city's wastewater treatment plant, so the waste does not have to be released straight into the river. The agency also plans to rehabilitate its 120-year-old sewage interceptor system so that the existing pipes can handle a greater volume of sewage and stormwater. Then, the agency is going to raise the level of small dam-like devices called “weirs” located inside the city's 58 combined sewage outfall regulator structures, which lead to the river or a tributary, Paxton Creek. The result will be less wastewater released to the Susquehanna, Stewart said.

“In effect, we'll be holding more water in the system,” Stewart said. “And by upgrading our pumping station, the total effect will be that we increase our overall capacity by 50 percent. And then, in conjunction with that, we are doing a citywide program of green infrastructure. That will allow us to intercept more stormwater before it actually gets into the system.”

EIP asked Stewart why Harrisburg does not plan on building underground storage tanks or tunnels, as Washington, Arlington, Scranton, Richmond, and other cities have built or are constructing. “The way our city is laid out, we'd have to build those tunnels the full length of the city,” Stewart said. “In our analysis, it becomes cost prohibitive rather quickly.”

Harrisburg's plan and consent decree do not include any requirements for bacteria monitoring in the Susquehanna River to determine if the planned work will actually reduce sewage pollution and improve water quality. Stewart suggested that such testing would be

too costly. Labs perform *E. coli* and fecal bacteria testing for \$40 per sample.<sup>58</sup> “Since we are not obligated to do it, it is going to be an expense and it’s a challenge to do,” Stewart said.<sup>59</sup> “We are just trying to, day-to-day, manage the operations at the most cost-effective point so we don’t have to raise sewer rates any more than is necessary.”

Stewart added that he does not believe that sewage releases from the city are harming the beach at Harrisburg’s City Island Park, which is closed because of high bacteria levels and is located only a few hundred yards from the city’s 58 sewage outfalls. He argued that the Susquehanna’s water currents wash the bacteria from the sewage directly along the shoreline, not across to the beach. Regardless of the beach, however, EIP’s water sampling also found bacterial contamination along the city’s shoreline, directly downstream from where the outfalls are located.

## Green Infrastructure as a Technique to Reduce Stormwater

Part of Capital Region Water’s plan to reduce the volume of sewage pouring into the Susquehanna River is to employ “green infrastructure” as a sponge to soak up rainwater before it flows down into the combined sewage and stormwater pipes.<sup>60</sup> This would include the planting of trees, the building of stormwater control systems called “rain gardens,” the installation of pavement permeable to rainwater in select areas, and the creation of some rooftops planted with vegetation.



*Rain gardens and other stormwater pollution control devices, such as this roadside ditch with trees, plants, and underground pipes to collect and filter polluted runoff, are examples of “green infrastructure.”*

The use of these stormwater control techniques is encouraged by the 2015 consent decree that the water authority signed with EPA and the state. “Capital Region Water will implement selected pilot projects aimed at demonstrating the utility of various green stormwater infrastructure control technologies in highly urbanized areas,” the agreement states.<sup>61</sup> This green infrastructure, according to the plan, will include “stormwater tree pits, curb cuts, bump-outs, porous pavement and tree trenches.”<sup>62</sup>

One reason the regional water authority is pushing these greening projects as a solution is because they are much cheaper than building large underground containment tanks to hold excess sewage and stormwater during rain storms, as other cities like Washington D.C. and Arlington, Virginia, are building. “A control plan was selected that minimizes combined sewage overflow discharges, improves water receiving quality, addresses stormwater management and local flooding, and meets affordable guideline constraints for rate payers,”

the Harrisburg long-term plan reads.<sup>63</sup> “It must be understood that strongly desired projects and/or control facility elements may need to be ruled out... because their costs are outside the range of affordability.”

This more affordable approach would mean, however, that the city’s antiquated plumbing system, which pipes human waste directly into the Susquehanna River, would remain indefinitely. Capital Region Water estimates that at least 300 million gallons of sewage combined with stormwater would continue to flow every year into the Susquehanna River.<sup>64</sup> That would be roughly 60 percent less than the current average of about 800 million gallons yearly. Those calculations, however, do not take into account the increasing intensity of rainfall happening because of climate change – or even the unusually high releases of 2017, when 899 million gallons flowed into the river; or 2018, when nearly 1.4 billion gallons were released.<sup>65</sup>

This raises the question of whether a future in which 2018 rainfall levels become the “new normal” would mean little or no reductions in combined sewage overflows into the Susquehanna River, given Capital Region Water’s plans to not close the sewage outfalls into the waterway or build a tank or tunnel containment system. “Nobody knows the answer to that,” replied Stewart of Capital Region Water.<sup>66</sup> “I hope that the trend does not continue to get worse. If so, we are going to have to adapt.”

Capital Region Water estimates that it could cost about \$1.2 billion dollars to build an underground tunnel and tank system that would capture 100 percent of the combined sewer/stormwater volume every year and prevent it from flowing into the river.<sup>67</sup> Such a tunnel might have to be 15 feet wide and have the capacity to hold 63 million gallons of sewage and stormwater. A more limited tunnel project that would capture 95 percent of the sewage and stormwater would cost more than \$800 million and require the building of a 32 million gallon storage tunnel.<sup>68</sup> Even for a capture rate of 92 percent, the regional water authority estimates it would have to build a 14 million gallon, 10 foot wide tunnel, which would cost more than \$700 million. That would be more than twice the \$315 million that Capital Region Water believes would be affordable over 20 years – without substantial contributions from the state of Pennsylvania.

## Bacteria Monitoring in the Susquehanna River

Neither the City of Harrisburg nor Capital Region Water conducts water quality monitoring in the Susquehanna River along Harrisburg’s waterfront, and the state Department of Environmental Protection’s most recent tests were three years ago.

To obtain more recent information about bacteria levels along Harrisburg’s waterfront, the Environmental Integrity Project worked with the Lower Susquehanna Riverkeeper to gather 60 water samples from June 19, 2019 until July 31, 2019. The groups then hired an independent lab to test the water samples for fecal coliform and *E. coli*. Fecal coliform, while not harmful on its own, is often tested in water monitoring as it can be a good indicator that there are other pathogens from waste present in the water. *E. coli*, or *Escherichia coli*, is a specific strain of bacteria that is found in humans and other warm-blooded animals, and EPA says that *E. coli* is “the best indicator of health risk from water contact in recreational waters.”<sup>69</sup>

The first sampling location, “Location 1,” was located along the Susquehanna River waterfront just downstream from the Governor’s Residence, not far from the intersection of Front Street and Delaware Street, about 50 yards downstream from a combined sewage and stormwater outfall pipe (labelled by the city as “Outfall 007.”) The second, “Location 2” was along Front Street waterfront near State Street, just downstream from the Capitol Office Complex, and about 25 yards down river from an outfall pipe (“Outfall 52.”) The third location, “Location 3,” was on the City Island Park beach, facing the Capitol Office Complex across the river. It should be noted that in our bacteria sampling, we did not conduct fecal source tracking or any monitoring upstream of Harrisburg.

Table B. Dates when *E. coli* Concentrations in Susquehanna River Exceeded Health Standards (235 CFU/100 ml)

| Station | Date       | Concentration (CFU/100mL) | Weather (wet or dry day) |
|---------|------------|---------------------------|--------------------------|
| 1       | 06-19-2019 | 1,120                     | Dry                      |
| 1       | 06-20-2019 | 2,420                     | Wet                      |
| 1       | 06-21-2019 | 1,730                     | Wet                      |
| 1       | 06-22-2019 | 1,410                     | Dry                      |
| 1       | 07-06-2019 | 326                       | Wet                      |
| 1       | 07-11-2019 | 921                       | Wet                      |
| 1       | 07-17-2019 | 1,730                     | Wet                      |
| 2       | 06-19-2019 | 727                       | Dry                      |
| 2       | 06-20-2019 | 2,420                     | Wet                      |
| 2       | 06-21-2019 | 1,550                     | Wet                      |
| 2       | 06-22-2019 | 770                       | Dry                      |
| 2       | 06-25-2019 | 248                       | Wet                      |
| 2       | 06-28-2019 | 261                       | Dry                      |
| 2       | 07-05-2019 | 308                       | Wet                      |
| 2       | 07-06-2019 | 276                       | Wet                      |
| 2       | 07-11-2019 | 2,420                     | Wet                      |
| 2       | 07-17-2019 | 2,420                     | Wet                      |
| 2       | 07-18-2019 | 365                       | Wet                      |
| 3       | 06-19-2019 | 365                       | Dry                      |
| 3       | 06-20-2019 | 1,550                     | Wet                      |
| 3       | 06-21-2019 | 722                       | Wet                      |
| 3       | 06-22-2019 | 1,300                     | Dry                      |
| 3       | 06-25-2019 | 2,420                     | Wet                      |
| 3       | 07-05-2019 | 1,550                     | Wet                      |
| 3       | 07-06-2019 | 579                       | Wet                      |
| 3       | 07-11-2019 | 2,420                     | Wet                      |
| 3       | 07-12-2019 | 365                       | Wet                      |
| 3       | 07-17-2019 | 2,420                     | Wet                      |
| 3       | 07-24-2019 | 1,990                     | Dry                      |

*Note: The state’s swimming water standard for E coli is 235 CFU/100mL in the Susquehanna River. The results here are expressed as most probable number (MPN) of colony forming units of E. coli, which is a comparable unit of measurement. A wet day is defined as such if there has been rainfall in the past 24 hours of taking the sample. The testing could not register figures higher than 2,420 CFU, so the figures above that list this number are actually 2,420 or greater.*

Table C. Dates When Fecal Coliform Concentrations in River Exceeded Health Standards (400 CFU/100mL)

| Station | Date       | Concentration (CFU/100mL) | Weather (wet or dry day) |
|---------|------------|---------------------------|--------------------------|
| 1       | 06-20-2019 | 3,600                     | Wet                      |
| 1       | 06-21-2019 | 1,530                     | Wet                      |
| 1       | 06-22-2019 | 855                       | Dry                      |
| 1       | 06-26-2019 | 440                       | Dry                      |
| 1       | 07-06-2019 | 636                       | Wet                      |
| 1       | 07-12-2019 | 430                       | Wet                      |
| 1       | 07-17-2019 | 35,400                    | Wet                      |
| 1       | 07-18-2019 | 873                       | Wet                      |
| 2       | 06-19-2019 | 690                       | Dry                      |
| 2       | 06-20-2019 | 8,100                     | Wet                      |
| 2       | 06-21-2019 | 3,300                     | Wet                      |
| 2       | 06-25-2019 | 420                       | Wet                      |
| 2       | 07-05-2019 | 470                       | Wet                      |
| 2       | 07-06-2019 | 550                       | Wet                      |
| 2       | 07-11-2019 | 5,100                     | Wet                      |
| 2       | 07-12-2019 | 712                       | Wet                      |
| 2       | 07-17-2019 | 28,400                    | Wet                      |
| 2       | 07-18-2019 | 3,300                     | Wet                      |
| 2       | 07-29-2019 | 600                       | Dry                      |
| 3       | 06-20-2019 | 1,050                     | Wet                      |
| 3       | 06-21-2019 | 1,300                     | Wet                      |
| 3       | 06-22-2019 | 1,110                     | Dry                      |
| 3       | 06-25-2019 | 590                       | Wet                      |
| 3       | 07-05-2019 | 1,900                     | Wet                      |
| 3       | 07-11-2019 | 17,200                    | Wet                      |
| 3       | 07-12-2019 | 540                       | Wet                      |
| 3       | 07-17-2019 | 40,000                    | Wet                      |
| 3       | 07-18-2019 | 1,740                     | Wet                      |
| 3       | 07-24-2019 | 3,600                     | Dry                      |
| 3       | 07-26-2019 | 2,700                     | Dry                      |

*Note: A wet day is defined as such if there has been rainfall in the past 24 hours before sample was taken. Water is considered unhealthy for swimming or water contact recreation by the state if over 10% of samples in a 30-day period are over 400 CFU/100mL.*

In general, bacteria levels in the river were several times higher on rainy days than on dry days, suggesting that combined sewage and stormwater overflows are likely driving up *E coli* and fecal coliform concentration levels in the river, combined with other runoff pollution flushed into the waterway from other sources. However, it is worth noting that *E coli* bacteria levels were also frequently high on dry days -- although some of the high readings on dry days were a day or two after rainfall. And in Harrisburg, the bacteria levels averaged significantly higher than healthy levels for swimming at both City Island Park beach and near the Governor's Residence.

*E. coli* Concentrations in the Susquehanna River on Wet vs. Dry days

| Location                          | Dry Day Average Concentration | Wet Day Average Concentration |
|-----------------------------------|-------------------------------|-------------------------------|
| Pennsylvania Governor's Residence | 308                           | 861                           |
| Capitol Office Complex            | 210                           | 1123                          |
| City Island Park Beach            | 361                           | 1340                          |

*Note: A wet day is defined as such if there has been rainfall in the past 24 hours of taking the sample. Water is considered unhealthy for recreational activities if *E. coli* levels are over 235 CFU/100mL.*

At the sampling location downstream from the Governor's Residence (see Figure 1), 53 percent of fecal coliform samples taken from June 19, 2019 to July 18, 2019 exceeded 400 CFU per 100mL, far above the state's limit of 10 percent. This location's five-day fecal coliform concentration geometric mean, which should not exceed 200 per 100 mL, averaged more than twice the swimming water standard at 547 CFU per 100 mL. On July 17, 2019, which was a rainy day, a single sample of fecal coliform was up to 35,400 CFU per 100mL (see Table C). About a third of *E. coli* samples taken during this sampling period exceeded the state's recreational standard. Five of the seven samples that exceeded the standard were taken on wet days. One sample taken on June 20, 2019, a day of light rain, had a sample result of over ten times the standard.

The river downstream from the Capitol Office Complex (see Figure 1) exceeded the fecal coliform recreational standard far above the 10 percent limit, with nearly 70 percent of samples exceeding 400 per 100mL from June 19, 2019 to July 18, 2019. Fecal coliform five-day geometric means<sup>70</sup> taken here averaged more than four times the swimming water standard – or 865 CFU per 100mL. Over half of the *E. coli* samples taken during the sampling period exceeded the recreational standard. *E. coli* reached CFU's at least 2,420 on three different days during this time (see Table B). It is important to note that the lab used by EIP and Lower Susquehanna Riverkeeper could not measure *E. coli* levels above 2,420, so these measurements could actually have been significantly higher.

At City Island Park Beach (see Figure 1), 60 percent of fecal coliform samples exceeded 400 CFU per 100mL. The five-day geometric means for these samples averaged 1,245 CFU's above the recreational standard. On July 17, 2019, which was a rainy day, a single sample of fecal coliform was up to 40,000 CFU per 100mL (see Table C).

In terms of *E. coli*, state standards indicate that a waterway is safe for recreational use as long as it does not test higher than 235 per 100mL. Eleven out of twenty sampling dates tested higher than this number at City Island Park beach, with the average number of CFU being 801, which is almost 3.5 times higher than that standard.<sup>71</sup>

In 2016, water sampling by state Department of Environmental Protection along the Harrisburg waterfront also found fecal coliform to exceed the recreational standard, and *E. coli* to be just below the standard.<sup>72</sup> DEP sampled for bacteria in the Susquehanna in August and September of 2016, one year following Harrisburg's Consent Decree. On August 18, 2016, the agency found that *E. coli* concentrations at 220 CFU per 100 mL, only slightly beneath the recreational standard of 235 CFU per 100mL.<sup>73 74</sup> On that same day, fecal

coliform exceeded the recreational standard at one monitoring point<sup>75</sup> with 700 CFU per 100mL.<sup>76</sup>

In 2014, DEP sampled for fecal coliform in locations upstream, downstream, and in the reach of Harrisburg from July to September of that year and found bacteria levels often too high for safe swimming. Bacteria levels upstream from Harrisburg were generally lower than they were along the city's waterfront or downstream.<sup>77</sup>

These are the most recent state water monitoring results from the Susquehanna River near Harrisburg, as there has been no water monitoring conducted for bacteria in the Susquehanna near Harrisburg in about three years. Capital Region Water's 2015 sewage consent decree<sup>78</sup> does not require it to conduct any bacterial water quality monitoring along the city's waterfront in the Susquehanna River in the future.<sup>79</sup> CRW's long-term control plan, submitted to the EPA on March 29, 2018, says that post-construction water quality monitoring will be implemented by partnering with the state and the Susquehanna River Basin Commission.<sup>80</sup>

## Public Notifications of Sewage Overflows

EPA's 2015 partial consent decree with Harrisburg and Capital Region Water requires the local water agency to "provide the public with information concerning CSO discharge occurrences and their impacts on water quality in the Receiving Water(s) (e.g., website notifications within 24 hours of the event, public service announcements on radio and/or television, newspaper public notifications."<sup>81</sup>

Claire Maulhardt, City Beautiful H2O Manager for Capital Region Water, said in an interview on June 6, 2019, that the agency has not been sending out press releases to announce sewage overflows, or doing social media on them (such as on Twitter or Facebook) or posting them on the agency's website.<sup>82</sup> As an alternative, she said CRW has an information line – 888-510-0606 – that people can call if they are curious whether or not there have been any recent overflows, and this line will have tape recorded messages with relevant information. Interested local residents can also sign up for email and text alerts, Maulhardt said.

"It doesn't go out to the newspapers, no," Maulhardt said of notifications of combined sewage and stormwater overflows. "We put it all on the hotline...The CSO notifications are all through the hotline."

However, a phone line is not effective method of notification to the general public or news media. To make use of a phone line, people need to know, in advance, when and how to call the information line. Residents also have to know about the existence of the email messaging system and be motivated enough to sign up for it. The point of public notification is to let all people in a community know when spills have occurred so they can make informed choices to protect themselves. And press releases about sewage releases, when reported in local news outlets, help voters understand why investments in clean water are needed.



The lack of press releases, website postings, or social media notifications about sewage overflow events appears to be a violation of the letter or spirit of the 2015 partial consent decree. The agreement specifies: “website notifications within 24 hours of the (overflow) event, public service announcements on radio and/or television, newspaper public notifications.”

## Harrisburg Advanced Wastewater Treatment Facility

Harrisburg’s sewage treatment plant, the Harrisburg Advanced Wastewater Treatment Facility, is a 45 million gallon per day capacity plant and is the largest publicly owned treatment facility in Pennsylvania within the Chesapeake Bay Watershed.<sup>83</sup> The Harrisburg plant has an expired permit to discharge effluent under the National Pollutant Discharge Elimination System. The permit authorized the Harrisburg Authority, now known as Capital Region Water, to discharge into Harrisburg waterways and expired on December 31, 2014.<sup>84</sup> CRW submitted a renewal application on July 7, 2014, but DEP has yet to renew the permit.<sup>85</sup>

Capital Region Water plans to invest approximately \$100 million into their conveyance and treatment system in the next 20-25 years.<sup>86</sup> In order to become compliant with the National CSO (combined sewer overflow) Policy, CRW’s long-term control plan details rehabilitation of conveyance and treatment systems in their “Immediate Implementation Phase.”<sup>87</sup> CRW has no improvements planned for their secondary treatment system, but will improve and rehabilitate the entire solids processing system, anaerobic digesters, and the methane gas codigestion system.<sup>88</sup> In order to decrease overflow occurrences, CRW plans to improve the hydraulic performance of the sewer system by identifying and correcting defects and hydraulic bottlenecks in the system.<sup>89</sup> CRW also completed cleanouts and replacements in the system.<sup>90</sup>

In April of 2016, the plant completed its upgrade to implement biological nutrient removal to comply with the nutrient removal requirements of the Chesapeake Bay Tributary Strategy and the ammonia reduction requirements of their NPDES permit.<sup>91</sup>

## Response from EPA and DEP about Harrisburg’s Sewage Plan

Neither the EPA nor DEP has approved Capital Region Water’s proposed plan for addressing combined sewage overflows, with EPA asking local water officials for a better capture rate than what Harrisburg is proposing so far. Authorities are also questioning some of the poverty claims of the water authority, by suggesting that the incomes of more suburban residents served by the sewer system should be factored into the ability to pay.

“EPA is currently working with CRW to develop an approvable Long-Term Control Plan that will reduce the volume and frequency of CSO overflows,” said EPA spokesperson Terri White in an emailed message to the Environmental Integrity Project on June 14, 2019.<sup>92</sup>

When asked why EPA doesn't require Harrisburg to install underground sewage and stormwater control tanks and other plumbing improvements, like Washington, D.C. and Alexandria, Virginia are installing, White replied: "EPA's CSO Policy considers a number of factors ... A system's ability to pay is one of the factors that is taken into account when looking at projects, priorities and implementation schedules."

As part of its research, EIP asked DEP whether the state of Pennsylvania will help pay for Harrisburg's planned sewage system improvements, given the state's ownership of large amounts of land and many buildings in the state capital.

Elizabeth Rementer, Press Secretary for the Department of Environmental Protection, replied in an email on June 14, 2019, that the state agency has not yet approved Capital Region Water's long-term plan. "The commonwealth values its partnership with the city and is currently reviewing the plan," Rementer said.<sup>93</sup> "Issues like these are not unique in Pennsylvania and the Wolf Administration has made it a top priority to address infrastructure needs like this one."

## Conclusion and Recommendations

There is no question that overhauling a more than century-old combined sewage and stormwater system like the one in the Harrisburg area is a complex and difficult task. More than 160 miles of pipes, carrying both rain water and human waste, flow beneath the city's streets, guiding waste to the city's wastewater treatment plant on dry days, and – when it rains – to 58 different outfalls into the Susquehanna River or a tributary, Paxton Creek. Much of the system has been badly neglected by the city over several decades, in part because Harrisburg has struggled with poverty, a shrinking population, and an inadequate tax base.

However, the large amount of water pollution flowing out of the city can no longer be ignored, with nearly 1.4 billion gallons of sewage mixed with rainwater pouring from the city's outfall pipes into the Susquehanna River in 2018 alone. And the city's small tax base cannot really be an excuse for inaction when the state of Pennsylvania itself – with its roughly \$34 billion annual budget – owns almost half of the land in Harrisburg, including beneath the State Capitol Complex and the Governor's Residence. All of these are state facilities that use Harrisburg's sewer lines – and flush their toilets into the Susquehanna River – without paying local real-estate taxes that could improve local infrastructure.

The Harrisburg region's water and sewer authority, Capital Region Water, is proposing to spend \$315 million over 20 years to address the sewage issue – but not in a way that will solve the underlying plumbing problem, close any of the 58 outfalls into the Susquehanna River, or stop the continued dumping of human waste into the river. That's an excessive amount for lower-income ratepayers to shoulder without fixing the problem, or any guarantee that – even decades from now – their children will ever be able to swim or play in the waterway. Capital Region Water is proposing to use some of the money to build "green infrastructure" – stormwater control systems, such as rain gardens and green roofs – to reduce the stormwater flow. But while this is a good first step, it cannot totally replace construction of a more modern sewer system that no longer intentionally pipes human

waste into the river. The city's "partial" consent decree with EPA and the Pennsylvania DEP is inadequate and does not require the city or regional water authority to stop the sewage flow or test for bacteria to ensure that whatever "green infrastructure" is installed actually reduces the amount of pollution in the river.

This report recommends the following steps:

- 1) EPA and the DEP should require the Harrisburg Capital Region Water authority to show how its long term plan will demonstrably reduce fecal bacteria levels in the Susquehanna River and allow the public to again use the waterfront for swimming, boating, and fishing.
- 2) If Harrisburg's plan cannot reduce bacteria levels, EPA and DEP should require Capital Region Water to do more to fix the underlying plumbing problem, such as by building underground storage tunnels to temporarily hold waste during storms before treatment. Such tunnels are already being built by Alexandria, Va., and Washington D.C., and are expected to reduce sewage and stormwater overflows by more than 90 percent in these cities. That's far more than the 60 percent reduction proposed in Harrisburg at a cost of \$315 million.
- 3) Because Harrisburg is the state capital and almost half of the land in the city is owned by state agencies – which pay no taxes – Pennsylvania should commit to paying most of the cost of improving Harrisburg's infrastructure and reducing the flow of sewage into the Susquehanna River.
- 4) State and federal regulators should mandate regular testing for bacteria along Harrisburg's riverfront and at City Island Park beach to determine whether the investments being initiated by Capital Region Water actually reduce the flow of sewage into the river. Without verification, it will be impossible to know whether additional steps are needed.
- 5) The state and federal agencies should require that Capital Region Water notify the media and general public whenever a combined sewage overflow occurs. Such notifications to the news media are not happening today, according to CRW. This is despite a requirement for public notification in the 2015 partial consent decree. Public awareness of the problem will help local residents protect their health and understand the need for investments.
- 6) EPA and the state should encourage stormwater control systems such as rain gardens, tree plantings, and green roofs. But this green infrastructure should be deployed in combination with sewage system upgrades to end the outdated piping of human waste into the Susquehanna River.
- 7) DEP and EPA should officially designate the Susquehanna River around Harrisburg as impaired for fecal bacteria under the federal Clean Water Act, which would force Pennsylvania to develop and follow a cleanup plan (a "Total Maximum Daily Load") to solve the sewage overflow problem.
- 8) Harrisburg and the other cities in Pennsylvania with combined sewage and stormwater systems should factor into their planning the increased amount of rainfall already deluging the region because of climate change. Failing to calibrate planning for the growing intensity of rainfall may mean that any planned solutions will be overwhelmed.

Pennsylvania has often been criticized by its downstream neighbors – and for good reason – for its lack of commitment to cleaning up the Chesapeake Bay, which starts with the Susquehanna River. But more important to the people of Pennsylvania is local water quality for local residents who want to enjoy waterways like the Susquehanna for fishing, swimming and boating. By investing a substantial amount of money in upgrading Harrisburg’s antiquated sewer system, the Pennsylvania state government would greatly enhance the health and beauty of its state capital – which is really the home and responsibility of everyone in the state – and demonstrate that the Commonwealth is committed to clean water.



## Methodology

In its testing for bacteria levels in the Susquehanna River to determine if it was safe for swimming, the Environmental Integrity Project used Pennsylvania's recreational use bacteria criteria as noted in DEP's Triennial Review of Water Quality Standards,<sup>94</sup> as well as an informational sheet from the Pennsylvania Department of Health regarding public bathing places.<sup>95</sup> DEP says the following regarding recreational use of waterways: "During the swimming season (May 1 through September 30), the maximum fecal coliform level shall be a geometric mean of 200 per 100 milliliters (ml) based on a minimum of five consecutive samples each sample collected on different days during a 30-day period. No more than 10% of the total samples taken during a 30-day period may exceed 400 per 100 ml." Geometric means are a specific type of average that are determined by multiplying all components together and calculating the square root of the resulting product. The Pennsylvania Health Department identifies two thresholds for *E. coli* to determine recreational use of a waterbody. The first being *E. coli* concentrations over 235 CFU/100mL and the second *E. coli* over 126 CFU/100mL for any thirty day geometric means.

These calculations were followed in order to analyze bacteria sampling conducted by the Environmental Integrity Project (EIP) and the Lower Susquehanna Riverkeeper. The riverkeeper organization collected a total of 60 water samples, 20 each at three locations as indicated on the map earlier in this report. It should be noted that in our bacteria sampling, we did not conduct fecal source tracking or any monitoring upstream of Harrisburg.

A third-party laboratory, ALS Environmental of Middletown, Pa., cultured and analyzed the water samples. The lab's results for *E. coli*, as included in this report, are the most probable number, or MPN, of colony forming units. Our analysis considered whether the sample was taken on a 'wet' day or 'dry' day, where a day is considered wet if there has been rainfall in the past 24 hours. The testing could not register figures higher than 2,420 CFU, so the figures above that list this number are actually 2,420 or greater.

Results from Bacteria monitoring conducted in 2016 was requested by EIP from PADEP. Results for bacteria monitoring conducted in 2014 was available in Capital Region Water's CSS Characterization Report.

## Appendix A: Water Sampling by Lower Susquehanna Riverkeeper / EIP

## SAMPLING LOCATION 1 (DOWNSTREAM FROM GOVERNOR'S RESIDENCE)

| Sampling Date | Precipitation on Sampling Date | Hours Since Last Rain | Fecal Coliform CFU/100mL) | E. coli (CFU/100mL) |
|---------------|--------------------------------|-----------------------|---------------------------|---------------------|
| 6/19/2019     | Dry                            | 27.2                  | 90                        | 1,120               |
| 6/20/2019     | Rain                           | 0.67                  | 3,600                     | 2,420               |
| 6/21/2019     | Rain                           | 5.48                  | 1,530                     | 1,730               |
| 6/22/2019     | Dry                            | 24.82                 | 855                       | 1,410               |
| 6/25/2019     | Rain                           | 6.77                  | 330                       | 163                 |
| 6/26/2019     | Dry                            | 28.92                 | 440                       | 144                 |
| 6/27/2019     | Dry                            | 60.57                 | 167                       | 146                 |
| 6/28/2019     | Dry                            | 80.4                  | 220                       | 201                 |
| 6/29/2019     | Dry                            | 100.9                 | 95                        | 99                  |
| 7/5/2019      | Rain                           | 1.18                  | 310                       | 225                 |
| 7/6/2019      | Rain                           | 11.17                 | 636                       | 326                 |
| 7/11/2019     | Rain                           | -0.43                 | 200                       | 921                 |
| 7/12/2019     | Rain                           | 16.78                 | 430                       | 93                  |
| 7/17/2019     | Rain                           | 0.4                   | 35,400                    | 1,730               |
| 7/18/2019     | Rain                           | 11.57                 | 873                       | 138                 |
| 7/24/2019     | Dry                            | 33.98                 | 230                       | 87                  |
| 7/26/2019     | Dry                            | 82.02                 | 260                       | 30                  |
| 7/27/2019     | Dry                            | 100.9                 | 210                       | 24                  |
| 7/29/2019     | Dry                            | 148.95                | 81                        | 70                  |
| 7/30/2019     | Dry                            | 176.3                 | 144                       | 56                  |

Note: The health-based swimming threshold for E. coli is 235 CFU/100mL. Values highlighted in yellow exceed this threshold. For fecal coliform, the threshold is for no more than 10 percent of sampling dates to exceed 400 CFU/100mL. In our sampling at this location, eight of the 20 samples (or 40 percent) exceeded this limit, meaning that levels of fecal coliform were too high for safe swimming. "Rain" days are defined as those in which precipitation has fallen less than 24 hours before the sampling time. "Dry" means rainfall more than 24 hours before sampling time. E. coli figures on charts expressed as most probable number (MPN) of CFU. The testing could not register figures for E coli higher than 2,420 CFU, so the figures above that list this number are actually 2,420 or greater.

## SAMPLING LOCATION 2 (DOWNSTREAM FROM STATE OFFICE COMPLEX)

| Sampling Date | Precipitation on Sampling Date | Hours Since Last Rain | Fecal Coliform CFU/100mL) | E. coli (CFU/100mL) |
|---------------|--------------------------------|-----------------------|---------------------------|---------------------|
| 06/19/2019    | Dry                            | 27.82                 | 690                       | 727                 |
| 06/20/2019    | Rain                           | 0.93                  | 8,100                     | 2,420               |
| 06/21/2019    | Rain                           | 5.85                  | 3,300                     | 1,550               |
| 06/22/2019    | Dry                            | 25.07                 | 310                       | 770                 |
| 06/25/2019    | Rain                           | 7.10                  | 420                       | 248                 |
| 06/26/2019    | Dry                            | 29.15                 | 260                       | 104                 |
| 06/27/2019    | Dry                            | 60.73                 | 119                       | 81                  |

|            |      |        |        |       |
|------------|------|--------|--------|-------|
| 06/28/2019 | Dry  | 80.90  | 240    | 261   |
| 06/29/2019 | Dry  | 101.15 | 69     | 57    |
| 07/05/2019 | Rain | 1.65   | 470    | 308   |
| 07/06/2019 | Rain | 11.43  | 550    | 276   |
| 07/11/2019 | Rain | -0.18  | 5,100  | 2,420 |
| 07/12/2019 | Rain | 16.95  | 712    | 99    |
| 07/17/2019 | Rain | 0.87   | 28,400 | 2,420 |
| 07/18/2019 | Rain | 11.77  | 3,300  | 365   |
| 07/24/2019 | Dry  | 34.20  | 180    | 56    |
| 07/26/2019 | Dry  | 82.30  | 99     | 41    |
| 07/27/2019 | Dry  | 101.17 | 126    | 20    |
| 07/29/2019 | Dry  | 149.13 | 600    | 147   |
| 07/30/2019 | Dry  | 176.45 | 230    | 51    |

Note: The health-based swimming threshold for *E. coli* is 235 CFU/100mL. Values highlighted in yellow exceed this threshold. For fecal coliform, the threshold is for no more than 10 percent of sampling dates to exceed 400 CFU/100mL. In our sampling at this location, 11 of the 20 samples (or 55 percent) exceeded this limit, meaning that levels of fecal coliform were too high for safe swimming. "Rain" days are defined as those in which precipitation has fallen less than 24 hours before the sampling time. "Dry" means rainfall more than 24 hours before sampling time. *E. coli* figures on charts expressed as most probable number (MPN) of CFU. The testing could not register figures for *E. coli* higher than 2,420 CFU, so the figures above that list this number are actually 2,420 or greater.

#### SAMPLING LOCATION 3 (ON CITY ISLAND PARK BEACH IN HARRISBURG)

| Sampling Date | Precipitation on Sampling Date | Hours Since Last Rain | Fecal Coliform CFU/100mL | <i>E. coli</i> (CFU/100mL) |
|---------------|--------------------------------|-----------------------|--------------------------|----------------------------|
| 06/19/2019    | Dry                            | 28.10                 | 340                      | 365                        |
| 06/20/2019    | Rain                           | 1.43                  | 1,050                    | 1,550                      |
| 06/21/2019    | Rain                           | 4.90                  | 1,300                    | 722                        |
| 06/22/2019    | Dry                            | 25.32                 | 1,110                    | 1,300                      |
| 06/25/2019    | Rain                           | 7.37                  | 590                      | 2,420                      |
| 06/26/2019    | Dry                            | 29.28                 | 120                      | 50                         |
| 06/27/2019    | Dry                            | 60.98                 | 24                       | 20                         |
| 06/28/2019    | Dry                            | 81.32                 | 23                       | 23                         |
| 06/29/2019    | Dry                            | 101.32                | 14                       | 11                         |
| 07/05/2019    | Rain                           | 1.88                  | 1,900                    | 1,550                      |
| 07/06/2019    | Rain                           | 11.75                 | 320                      | 579                        |
| 07/11/2019    | Rain                           | 0.17                  | 17,200                   | 2,420                      |
| 07/12/2019    | Rain                           | 17.13                 | 540                      | 365                        |
| 07/17/2019    | Rain                           | 0.17                  | 40,000                   | 2,420                      |
| 07/18/2019    | Rain                           | 11.95                 | 1,740                    | 35                         |
| 07/24/2019    | Dry                            | 34.57                 | 3,600                    | 1,990                      |
| 07/26/2019    | Dry                            | 82.55                 | 2,700                    | 101                        |
| 07/27/2019    | Dry                            | 101.38                | 72                       | 31                         |
| 07/29/2019    | Dry                            | 149.45                | 117                      | 54                         |

07/30/2019 Dry

176.62

9

21

*Note: The health-based swimming threshold for E. coli is 235 CFU/100mL. Values highlighted in yellow exceed this threshold. For fecal coliform, the threshold is for no more than 10 percent of sampling dates to exceed 400 CFU/100mL. In our sampling at this location, 11 of the 20 samples (or 55 percent) exceeded this limit, meaning that levels of fecal coliform were too high for safe swimming. "Rain" days are defined as those in which precipitation has fallen less than 24 hours before the sampling time. "Dry" means rainfall more than 24 hours before sampling time. E. coli figures on charts expressed as most probable number (MPN) of CFU. The testing could not register figures for E. coli higher than 2,420 CFU, so the figures above that list this number are actually 2,420 or greater.*

## NOTES

<sup>1</sup> EPA Chesapeake Bay Total Maximum Daily Load for the Chesapeake Bay.

[https://www.epa.gov/sites/production/files/2014-](https://www.epa.gov/sites/production/files/2014-12/documents/chay_final_tmdl_exec_sum_section_1_through_3_final_0.pdf)

[12/documents/chay\\_final\\_tmdl\\_exec\\_sum\\_section\\_1\\_through\\_3\\_final\\_0.pdf](https://www.epa.gov/sites/production/files/2014-12/documents/chay_final_tmdl_exec_sum_section_1_through_3_final_0.pdf)

<sup>2</sup> EPA, "Evaluation of Pennsylvania's 2016-2017 and 2018-2019 Milestones," July 27, 2018. Link:

<https://www.epa.gov/sites/production/files/2018-07/documents/final-evaluation-pa-2016-2017-and-2018-2019-milestones.pdf>

<sup>3</sup> Capital Region Water, "Semiannual Report on Consent Decree Implementation, July 1, 2018 to Dec. 31, 2018," released March 2019. Link: <https://capitalregionwater.com/wp-content/uploads/2019/04/CRW-Ch94-SemiAnn-Rpt-2018.pdf>

<sup>4</sup> Pennsylvania's standard for safe swimming water for E. coli is no more than 235 CFU/100 ml water. Sampling performed on 10 dates in June and 10 in July at three different locations along the Harrisburg waterfront, downstream from the Governor's residence, the Pennsylvania State Capitol Complex, and on City Island Park beach. Samples taken by Lower Susquehanna Riverkeeper and analysis by ALS Environmental labs of Middletown, Pa.

<sup>5</sup> Number of combined sewage overflow municipalities from EPA spokesman Terri White on June 14, in response to an EIP information request.

<sup>6</sup> EPA spokesman Terri White on June 14 via email, in response to an EIP information request.

<sup>7</sup> Lower estimate from EPA spokesman Terri White on June 14, in response to an information request. Higher estimate from EIP calculation using EPA Chesapeake Bay Program numbers.

<sup>8</sup> Capital Region Water, "Semiannual Report on Consent Decree Implementation, July 1, 2018 to Dec. 31, 2018," released March 2019. Link: <https://capitalregionwater.com/wp-content/uploads/2019/04/CRW-Ch94-SemiAnn-Rpt-2018.pdf>

<sup>9</sup> Ibid.

<sup>10</sup> EPA fact sheet, "Why Control Sanitary Sewer Overflows?" accessed August 15, 2019. Link:

[https://www.epa.gov/sites/production/files/2015-10/documents/sso\\_casestudy\\_control.pdf](https://www.epa.gov/sites/production/files/2015-10/documents/sso_casestudy_control.pdf)

<sup>11</sup> EPA, "City of Harrisburg Clean Water Act Settlement," February 11, 2015. Visit:

<https://www.epa.gov/enforcement/city-harrisburg-clean-water-act-settlement>

<sup>12</sup> EPA, "City of Harrisburg Clean Water Act Settlement," February 11, 2015. Visit:

<https://www.epa.gov/enforcement/city-harrisburg-clean-water-act-settlement>

<sup>13</sup> Spreadsheet of DEP penalties to Capital Region Water for sewage violations provided on request via email to EIP by Elizabeth Rementer, Press Secretary for the Department of Environmental Protection, on June 14, 2019.

<sup>14</sup> Capital Region Water "City Beautiful H2O Plan," released March 2018. Link:

<https://capitalregionwater.com/full-plan>

<sup>15</sup> Capital Region Water "City Beautiful H2O Plan," released March 2018. Link:

<https://capitalregionwater.com/full-plan>. And interview with David Stewart, Director of Engineering at Capital Region Water, on June 6, 2019.

<sup>16</sup> Ibid.

<sup>17</sup> Ibid.

<sup>18</sup> Ibid.

<sup>19</sup> Testing of water samples performed by ALS Environmental labs of Middletown, Pa.



<sup>20</sup> This is expressed as “most probable number” (MPN) of colony forming units (CFU) of bacteria, a method used by laboratories of estimating the colony forming units per 100 ml of water. Pennsylvania health officials say that MPN can be compared to the state standard of 225 CFU/100 ml of water.

<sup>21</sup> This number is expressed as most probable number (MPN) of colony forming units. See note above.

<sup>22</sup> Ibid.

<sup>23</sup> Interview with Claire Maulhardt, City Beautiful H2O Manager for Capital Region Water, on June 6, 2019, at CRW offices in Harrisburg.

<sup>24</sup> Karl Blankenship, “Midpoint assessment for Bay cleanup: only 40% of nitrogen goal met,” Bay Journal, July 09, 2018. Link:

[https://www.bayjournal.com/article/midpoint\\_assessment\\_for\\_bay\\_cleanup\\_only\\_40\\_of\\_nitrogen\\_goal\\_met](https://www.bayjournal.com/article/midpoint_assessment_for_bay_cleanup_only_40_of_nitrogen_goal_met)

<sup>25</sup> EPA Chesapeake Bay Total Maximum Daily Load for the Chesapeake Bay.

[https://www.epa.gov/sites/production/files/2014-12/documents/cbay\\_final\\_tmdl\\_exec\\_sum\\_section\\_1\\_through\\_3\\_final\\_0.pdf](https://www.epa.gov/sites/production/files/2014-12/documents/cbay_final_tmdl_exec_sum_section_1_through_3_final_0.pdf)

<sup>26</sup> Source: Pennsylvania State Budgets, fiscal 2008 to 2018. Link:

<https://www.budget.pa.gov/PublicationsAndReports/CommonwealthBudget/Pages/PastBudgets2015-16To2006-07.aspx>. Note: These DEP budget figures include the following pollution control programs:

General DEP Government Operations, Environmental Program Management, Environmental Protection Operations, Safe Water, Sewage Facilities Planning Grants, Sewage Facilities Enforcement Grants, Storm Water Management, and Chesapeake Bay Pollution Abatement. The numbers do not include the following programs: Black Fly Control; West Nile Virus Control; Flood Control Projects; Climate Change Initiatives; Consumer Energy Program; Transfer to Home Energy Efficiency Loan Fund; Data Center Energy Conservation Projects; DE River Master; OH River Basin Commission; Susquehanna River Basin Commission; Interstate Commission on the Potomac River; DE River Basin Commission; OH River Valley Water Sanitation Commission; Chesapeake Bay Commission; Transfer to Conservation District Fund; Interstate Mining Commission; and Sea Grant Program.

<sup>27</sup> Pennsylvania sewage plants that are upgraded are generally improved to a lower standard than ENR called Biological Nutrient Removal or BNR, according to the Pennsylvania Department of Environmental Protection. Data on wastewater treatment plant upgrades provided by EPA Chesapeake Bay Program via email.

<sup>28</sup> Maryland Department of the Environment, “Bay Restoration Fund Targeted Wastewater Treatment Plants,” July 2018. Link: <https://mde.maryland.gov/programs/Water/BayRestorationFund/Documents/7-BRF-WWTP%20Update%20for%20BayStat.pdf>

<sup>29</sup> Data sheet on Virginia wastewater treatment plant upgrades provided on October 27, 2017, by Allan Brockenbrough, Manager of the Office of VPDES Permits for the Virginia Department of Environmental Quality. Virginia doesn’t use the term “ENR” or Enhanced Nutrient Removal for its sewage plants, but these figures reflect plants designed to discharge 3 or 4 mg/liter nitrogen. MDE update on Bay Restoration Fund sewage treatment plant upgrades, September 2017.

<http://mde.maryland.gov/programs/Water/BayRestorationFund/Documents/9-BRF-WWTP%20Update%20for%20BayStat.pdf>

<sup>30</sup> Pennsylvania DEP, “Agricultural Inspections: July 1, 2017 through June 30, 2018.” Link:

[http://files.dep.state.pa.us/Water/BNPNSM/AgriculturalOperations/AgriculturalCompliance/FINAL\\_CBA\\_IP\\_Annual%20Summary\\_2018.pdf](http://files.dep.state.pa.us/Water/BNPNSM/AgriculturalOperations/AgriculturalCompliance/FINAL_CBA_IP_Annual%20Summary_2018.pdf)

<sup>31</sup> EPA, “City of Harrisburg Clean Water Act Settlement,” February 11, 2015. Visit:

<https://www.epa.gov/enforcement/city-harrisburg-clean-water-act-settlement>

<sup>32</sup> Data from June 14, 2019, emails from EPA and Pennsylvania DEP to EIP in response to requests for information.

<sup>33</sup> Data from June 14, 2019, emails from EPA and Pennsylvania DEP to EIP in response to requests for information. In addition, Capital Region Water sewage consent decree semi-annual reports, posted on its website: <https://capitalregionwater.com/full-plan/>

<sup>34</sup> Capital Region Water, “Chapter 94 Municipal Wasteload Management Report Calendar Year 2018 and Semi Annual Report on Consent Decree Implementation, July 1, 2018 to December 31, 2018, available at: <https://capitalregionwater.com/wp-content/uploads/2019/04/CRW-Ch94-SemiAnn-Rpt-2018.pdf>. Data also from previous semi-annual reports posted on CRW website.

<sup>35</sup> Capital Region Water posts its semi-annual reports on sewage discharges, as well as other relevant public records, on its website, here: <https://capitalregionwater.com/full-plan/>

<sup>36</sup> Ibid.

<sup>37</sup> Ibid.

<sup>38</sup> Interview with David Stewart, chief engineer, at the Capital Region Water Administrative Building on June 6, 2019.

<sup>39</sup> National Weather Service, “Year to Date Observed Precipitation”. Link: <https://water.weather.gov/precip/#>

<sup>40</sup> Ibid.

<sup>41</sup> US Department of Justice press release, “U.S., Pennsylvania and Scranton, Pa., Sewer Authority Settle Violations of Sewage Overflows,” Dec. 13, 2012. Link: <https://www.justice.gov/opa/pr/us-pennsylvania-and-scranton-pa-sewer-authority-settle-violations-sewage-overflows>

<sup>42</sup> City of Alexandria Transportation Commission memo, March 20, 2019. Link: [https://www.alexandriava.gov/uploadedFiles/tes/info/Complete%20Docket\(10\).pdf](https://www.alexandriava.gov/uploadedFiles/tes/info/Complete%20Docket(10).pdf)

<sup>43</sup> Jacob Fenston, “After Decades Of Polluting Potomac, Alexandria Plans New Sewage Tunnel,” WAMU, October 3, 2018. Link: <https://wamu.org/story/18/10/03/decades-polluting-potomac-alexandria-plans-new-sewage-tunnel/>

<sup>44</sup> DC Water, “Potomac River Tunnel Project.” Link: <https://www.dewater.com/projects/potomac-river-tunnel-project>

<sup>45</sup> Ibid.

<sup>46</sup> City of Richmond website, “Combined Sewer Overflow (CSO) in Richmond,” link: <http://www.virginiaplaces.org/waste/csorichmond.html>

<sup>47</sup> Environmental Protection Agency, “CSO Community Case Studies,” 2015. Link: <https://www.epa.gov/sites/production/files/2015-10/documents/csorcappc.pdf>

<sup>48</sup> Capital Region Water plan, “City Beautiful H2O.” Link: <https://capitalregionwater.com/full-plan/>

<sup>49</sup> Ibid.

<sup>50</sup> Interview with David Stewart, Director of Engineering at Capital Region Water, on June 6, 2019.

<sup>51</sup> U.S. Census Bureau fact finder, “Swatara township, Dauphin County, Pennsylvania.” Link: [https://factfinder.census.gov/faces/nav/jsf/pages/community\\_facts.xhtml?src=bkmk](https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml?src=bkmk)

<sup>52</sup> Capital Region Water press release, “Capital Region Water Opens Public Comment Period for Stormwater Fee Proposal and Implementation Plan,” June 27, 2019. Link: <https://capitalregionwater.com/news/>

<sup>53</sup> Sean Sauro, “A Bad Time for Stormwater Fees? Harrisburg Mayor Says It Is, but Water Board Decides Otherwise,” PennLive, June 27, 2019. Link: <https://www.pennlive.com/news/2019/06/a-bad-time-for-stormwater-fees-harrisburg-mayor-says-it-is-but-water-board-ignores-him.html>

<sup>54</sup> Capital Region Water press release, “Capital Region Water Opens Public Comment Period for Stormwater Fee Proposal and Implementation Plan,” June 27, 2019. Link: <https://capitalregionwater.com/news/>

<sup>55</sup> Ibid.

<sup>56</sup> Capital Region Water July 18 press release, “Capital Region Water Announces Three Community Meetings to Learn More and Provide Feedback on a Stormwater Fee Proposal and Implementation Plan.” Link: <https://capitalregionwater.com/news/>

<sup>57</sup> Email to EIP from Elizabeth Rementer, Press Secretary for the Department of Environmental Protection, on June 14, 2019.

<sup>58</sup> Cost estimate from ALS Laboratories of Middletown, Pa.

<sup>59</sup> Interview with David Stewart, Director of Engineering at Capital Region Water, on June 6, 2019.

<sup>60</sup> Capital Region Water plan, “City Beautiful H2O.” Link: <https://capitalregionwater.com/full-plan/>

<sup>61</sup> EPA, “City of Harrisburg Clean Water Act Settlement,” February 11, 2015. Visit: <https://www.epa.gov/enforcement/city-harrisburg-clean-water-act-settlement>

<sup>62</sup> Capital Region Water plan, “City Beautiful H2O.” Link: <https://capitalregionwater.com/full-plan/>

<sup>63</sup> Ibid.

<sup>64</sup> Ibid.

<sup>65</sup> Capital Region Water, “Semiannual Report on Consent Decree Implementation, July 1, 2018 to Dec. 31, 2018,” released March 2019. Link: <https://capitalregionwater.com/wp-content/uploads/2019/04/CRW-Ch94-SemiAnn-Rpt-2018.pdf>

<sup>66</sup> Interview with David Stewart, chief engineer, at the Capital Region Water Administrative Building on June 6, 2019.

<sup>67</sup> Capital Region Water plan, “City Beautiful H2O.” Link: <https://capitalregionwater.com/full-plan/>

<sup>68</sup> Ibid.

<sup>69</sup> EPA, Water: Monitoring and Assessment, <https://archive.epa.gov/water/archive/web/html/vms511.html>.

<sup>70</sup> Geometric means are used as a limit as this method normalizes the ranges being averaged, so that no single result overshadows the rest.

<sup>71</sup> The 30-day geometric mean limit for *E. coli* is 126 colony forming units (CFU) per 100mL. None of the samples taken during this period, at any of the three locations, complied with this limit. On wet days, *E. coli* had consistently higher colony counts than on dry days, at all three sampling points (see Table B).

<sup>72</sup> DEP's eMapPA application, accessed May 9, 2019, <http://www.depgis.state.pa.us/emappa/>

<sup>73</sup> DEP's eMapPA application, accessed May 9, 2019, <http://www.depgis.state.pa.us/emappa/>.

<sup>74</sup> Public Bathing Places Sampling and Laboratory Requirements Q & A,

[https://www.health.pa.gov/topics/Documents/Programs/Q\\_A-Sampling\\_and\\_Laboratory\\_Requirements.pdf](https://www.health.pa.gov/topics/Documents/Programs/Q_A-Sampling_and_Laboratory_Requirements.pdf).

<sup>75</sup> Monitoring point CONO\_36.

<sup>76</sup> This represented 17 percent of the total samples, which is above the 10 percent threshold for swimming water. Other samples taken within 30 days at the same sampling point were between 9 and 160 CFU per 100mL, and no other sample results exceeded the recreational standard.

<sup>77</sup> In the 2014 water sampling by DEP, upstream from Harrisburg 17 percent of fecal coliform concentrations exceeded 400 colony forming units (CFU) per 100mL –which is higher than the state recreational use standard of 10 percent of thirty days of sampling. Downstream of Harrisburg, 27 percent of concentrations were above 400 CFU per 100mL. Sampling done in the reach near Harrisburg and on the East Shore adjacent to Harrisburg exceeded 400 CFU per 100mL 30 percent of the time and 40 percent of the time. On the east shore adjacent to Harrisburg, one sample reached 6,000 CFU per 100 mL on August 12, 2014 when there was only light rain. The other method of determining recreational use is a five-day geometric mean of fecal coliform concentrations. The threshold for this method is 200 CFU per 100mL. The upstream site exceeded this threshold four times during the testing period, the downstream site twice, the site in the reach of Harrisburg three times, and the site adjacent to Harrisburg once. Geometric means are used as a limit as this method normalizes the ranges being averaged, so that no single result overshadows the rest.

<sup>78</sup> Harrisburg Partial Consent Decree, <https://www.epa.gov/sites/production/files/2015-02/documents/cityofharrisburg-cd.pdf>.

<sup>79</sup> Interview with David Stewart, chief engineer, at the Capital Region Water Administrative Building on June 6, 2019.

<sup>80</sup> Capital Region Water Long-Term Control Plan, <https://capitalregionwater.com/full-plan/>, 10-8 to 10-9.

<sup>81</sup> EPA and DEP partial consent decree with Harrisburg and Capital Region Water, 2015. Link: <https://capitalregionwater.com/wp-content/uploads/2014/11/Harrisburg-Partial-CD.pdf>

<sup>82</sup> Interview with Claire Maulhardt, City Beautiful H2O Manager for Capital Region Water, on June 6, 2019, at CRW offices in Harrisburg.

<sup>83</sup> Capital Region Water Consulting Engineer's Report for the Wastewater System (September 28, 2018), <https://capitalregionwater.com/wp-content/uploads/2018/10/2018-09-28-Wastewater-CEAR-FINAL-2018.pdf>, 4.

<sup>84</sup> NPDES Permit No. PA 0027197.

<sup>85</sup> David Stewart.

<sup>86</sup> Ibid.

<sup>87</sup> Long-Term Control Plan, 11-4 to 11-5.

<sup>88</sup> David Stewart.

<sup>89</sup> Long-Term Control Plan, 11-7 to 11-8.

<sup>90</sup> Capital Region Water Consulting Engineer's Report for the Wastewater System (October 3, 2016) <https://capitalregionwater.com/wp-content/uploads/2014/06/2016-10-03-Wastewater-CEAR-Final.pdf>, 26-28.

<sup>91</sup> Consulting Engineer's Report (September 28, 2018), 30. Note: Prior to this upgrade, CRW was purchasing nitrogen credits for the Harrisburg Advanced WWTP from 2014 to 2016. Another requirement of the 2015 consent decree was for the sewage plant to repair sinkholes caused by sewer infrastructure and investigate combined sewage outfalls that experience river intrusion or wastewater exfiltration.

<sup>92</sup> Email to EIP from EPA spokesperson Terri White on June 14, 2019.

<sup>93</sup> Email to EIP from Elizabeth Rementer, Press Secretary for the Department of Environmental Protection, on June 14, 2019.

<sup>94</sup> Pennsylvania's Department of Environmental Protection's (PADEP) Triennial Review of Water Quality Standards (located from this website, on pages 1 and 2. Link: <http://files.dep.state.pa.us/PublicParticipation/Public%20Participation%20Center/PubPartCenterPortalFiles>

/Environmental%20Quality%20Board/2016/September%2020/Triennial%20Review/07\_7-534\_Triennial%202016\_Bacteria%20Rationale.pdf)

<sup>95</sup> Informational sheet from the Pennsylvania Department of Health regarding public bathing places. Link: [https://www.health.pa.gov/topics/Documents/Programs/Q\\_A-Sampling\\_and\\_Laboratory\\_Requirements.pdf](https://www.health.pa.gov/topics/Documents/Programs/Q_A-Sampling_and_Laboratory_Requirements.pdf)).



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# Exhibit E



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*Via First-Class Mail and Electronic Mail*

February 27, 2020

Governor Thomas Wolf  
Office of the Governor  
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Harrisburg, PA 17120

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**Re: Recommendations for a Final Consent Decree to Reduce Discharges of  
Untreated Sewage from the City of Harrisburg's Wastewater System**

Dear Governor Wolf and the Pennsylvania Department of Environmental Protection:

The Environmental Integrity Project ("EIP") and the Lower Susquehanna Riverkeeper Association ("LSRA") are writing in anticipation of our agreed upcoming meeting with the Pennsylvania Department of Environmental Protection ("DEP") in March 2020 to discuss measures in an updated consent decree with the City of Harrisburg that are critical to achieving compliance and ensuring continued compliance with Pennsylvania's Clean Streams Law and the Clean Water Act. The discharge of untreated sewage from our Commonwealth's capital city into the Susquehanna River and Paxton Creek must be significantly reduced. The current consent decree does not achieve compliance with either state or federal law and we feel strongly that too much time has elapsed without addressing and imposing the actions necessary to significantly reduce if not eliminate untreated sewage discharges to the capital's waterways.

Following the conversation EIP's senior attorney Lisa Hallowell had with DEP, this letter summarizes measures contained in other consent decrees that have proven to be effective at reducing and eliminating discharges of untreated sewage. We urge you to consider these recommendations when revising and updating the partial consent decree entered in 2015<sup>1</sup> ("2015

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<sup>1</sup> United States v. Capital Region Water, Civil Action No. 1:15-cv-00291-WWC, Partial Consent Decree (M.D. Pa., Feb. 10, 2015), <https://www.epa.gov/sites/production/files/2015-02/documents/cityofharrisburg-cd.pdf> [hereinafter 2015 Partial Consent Decree].

Partial Consent Decree”). To start the conversation, EIP and LSRA propose that the final Consent Decree must include:

- A variety of possible infrastructure upgrades, including upgrades to increase wastewater treatment system capacity to treat rather than discharge waste, or upgrades to the system to separately pipe and store wastewater and stormwater to reduce reliance upon or discharges from CSOs;
- Limits on the number, frequency, and/or volumes of sanitary overflows;
- Requiring enforceable deadlines for control measures that are contained not just in the Long-Term Control Plan (“LTCP”) but in the body of the consent decree itself; and
- Requiring water quality monitoring to verify that the investments made by the Harrisburg region actually reduce the amount of sewage flowing into the Susquehanna River and improve fecal bacteria levels in the parts of the river directly downstream from Harrisburg’s outfalls.

The 2015 Partial Consent Decree, which fails to require the infrastructure changes or impose deadlines needed to end or significantly reduce untreated sewage discharges, has been in place for more than 5 years—the length of an entire permit cycle under the Clean Water Act. Continued reliance on a partial consent decree that sets no deadlines for ending sewage releases continues to put public health at risk and erode local water quality and also undermines the Chesapeake Bay cleanup. Consequently, DEP must start the process of redrafting a final consent decree to incorporate the changes proposed below and other key changes immediately, and the improved consent decree must be finalized as soon as possible—within this calendar year—to minimize risks to public health and the environment.

## **I. Background/Scope of the Problem**

As you know, the 2015 Partial Consent Decree entered into by DEP, the U.S. Environmental Protection Agency (“EPA”), the Capitol Region Water Sewer System (“CRW”), and the City of Harrisburg, Pennsylvania (“the City” or “Harrisburg”), was intended as a stop-gap, intermediate measure.<sup>2</sup> The 2015 Partial Consent Decree was entered in response to DEP and EPA filing a Complaint in federal court for alleged violations of the Clean Water Act, 33 U.S.C. §§ 1251 *et seq.* (“CWA”), and terms of the National Pollutant Discharge Elimination System (“NPDES”) permit, No. PA0027179, issued to CRW “relating to the municipal wastewater treatment plant and the conveyance system owned by CRW and formerly operated by the City, and the collection system formerly owned and operated by the City,” and also for alleged violations of the CWA and general NPDES permit No. PAG-13, coverage No. PAG-133686 (“MS4 General Permit”), relating to the municipal separate storm water system.

CRW operates the publicly owned treatment works (“POTW”) for the City of Harrisburg, which includes a treatment plant called the CRW Advanced Wastewater Treatment Facility (“AWTF”) and a “conveyance system” that includes pumps and other systems to convey

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<sup>2</sup> *Id.*



wastewater to the AWTF from the “collection system.” The collection system, owned by the City, includes the combined sewer systems (“CSS”) that receive both wastewater and storm water as well as a separate storm water system.<sup>3</sup> Discharges from the ATWF, conveyance system, and CSS are subject to NPDES Permit No. PA0027197, issued by DEP to CRW’s predecessor (the Harrisburg Authority) in 2009,<sup>4</sup> while stormwater discharges from the municipal separate storm water system, owned by the City, are covered by the MS4 General Permit. The CSS includes 59 combined sewer overflow (“CSO”) regulators, which are located where CSSs are connected to interceptor sewers, and which control how much flow is directed to the AWTF and how much is discharged to the receiving water.<sup>5</sup>

Paxton Creek is impaired for its designated use of aquatic life based on low levels of dissolved oxygen (“DO”) due to high biological oxygen demand (“BOD”) caused by CSOs.<sup>6</sup> It is also impaired for the designated use of aquatic life due to siltation/total suspended solids, flow variability, and habitat alteration due to urban/stream sewers that may be related to CSOs.<sup>7</sup> It is also impaired for its designated use of recreation due to pathogens from an unknown source that may be related to CSOs.<sup>8</sup>

EPA and DEP’s Complaint identified many violations of the CWA and the NPDES Permit requirements from the CSS and the MS4 systems, including: dry weather combined sewer overflows (“CSOs”); failure to implement the Nine Minimum Controls in the CSS; failure to implement the Minimum Control Measures in the MS4; exceedances of effluent limitations at the AWTF; separate sanitary sewer overflows from the separate portions of the collection system; and failure to implement the schedule for Biological Nutrient Removal in the NPDES permit, among others. The agencies also found CRW’s LTCP to be inadequate to comply with EPA’s 1994 CSO Policy that was adopted into the Clean Water Act.<sup>9</sup>

The 2015 Partial Consent Decree clearly states that it does not resolve the violations alleged by DEP and EPA.<sup>10</sup> The failure of the 2015 Partial Consent Decree to curb discharges of sewage from Harrisburg’s waste water system is evidenced by the fact that CRW admitted that

<sup>3</sup> 2015 Partial Consent Decree, at 1–2.

<sup>4</sup> The fact that this NPDES permit expired in 2014 and has not been renewed, nor has a draft permit even been released for public comment, means that none of the requirements from the 2015 Partial Consent Decree have been incorporated into the NPDES permit. A new permit must be drafted and finalized as quickly as possible and it must include more stringent requirements as well as strict deadlines and schedules for compliance to bring the discharges into compliance with the Clean Water Act.

<sup>5</sup> Capital Region Water, Combined Sewer System Characterization Report v2.0, at 3-7 (Feb. 2018), [https://capitalregionwater.com/wp-content/uploads/2018/01/CSS-Characterization-Report\\_v.2.0-FINAL-FOR-WEBSITE.pdf](https://capitalregionwater.com/wp-content/uploads/2018/01/CSS-Characterization-Report_v.2.0-FINAL-FOR-WEBSITE.pdf).

<sup>6</sup> *Id.* at 4-3, tbl. 4-1.

<sup>7</sup> *Id.*

<sup>8</sup> *Id.*

<sup>9</sup> See 33 U.S.C. § 1342(q).

<sup>10</sup> See, e.g., 2015 Partial Consent Decree, at 4 (“this Consent Decree is a partial consent decree that does not resolve any claims the Plaintiffs have for injunctive relief for CRW’s alleged failure to implement an LTCP meeting the requirements of the CSO Policy and CWA or civil penalties for CRW’s violations of the Clean Water Act or Clean Streams Law as alleged in the Complaint, and that this Consent Decree does not resolve any claims Plaintiffs may have for penalties or injunctive relief for violations not alleged in the Complaint filed simultaneously with this Consent Decree, and that the Parties reserve all claims and defenses that they may have concerning all these matters”).

the amount of stormwater mixed with raw sewage discharged from Harrisburg and the six surrounding suburbs served by CRW averages about 789 million gallons per year.<sup>11</sup> And, EIP's August 2019 report, entitled "Sewage Overflows in Pennsylvania's Capital,"<sup>12</sup> reveals that CRW reported that that number increased to 899 million in 2017 and then ballooned to 1.4 billion in 2018, a wet weather year.<sup>13</sup> This raw sewage contains viruses, bacteria, worms, and protozoa and can cause stomach flu, respiratory infections, and potentially life-threatening illnesses in humans when released without being treated, in addition to high levels of nitrogen and phosphorus that threaten aquatic life.<sup>14</sup>

In fact, EIP and LSRA conducted sampling in the summer of 2019 and found *E coli* bacteria levels along the city's waterfront averaging almost three times higher than would be safe for swimming or water-contact recreation.<sup>15</sup> Of the 60 water samples analyzed from June 15 to July 31, 2019, almost half (29) violated health standards. Seven samples measured *E coli* at more than 10 times safe levels, including on City Island Park beach, and along the riverwalk just downstream from outfalls leading from the Governor's Residence and the Capitol Office Complex.<sup>16</sup>

We have initiated a review of consent decrees for neighboring cities, which confirm that it is possible for Harrisburg's sewer system to curb and eventually eliminate discharges of untreated sewage into Pennsylvania's waterways. The 2015 Partial Consent Decree, which falls far short of achieving the pollution reduction measures achieved in consent decrees for other local water authorities, must be revised immediately and must incorporate measures actually designed to dramatically reduce this serious public health and environmental problem.

The 2015 Partial Consent Decree is notably different from other neighboring consent decrees in that it fails to impose any penalty against CRW or the City as a result of their violations of the federal CWA or their discharge permits. In addition, the control measures contained in the 2015 Partial Consent Decree are woefully inadequate to protect public health when compared with other consent decrees, as the 2015 Partial Consent Decree:

- 1) Fails to require Defendants to cease illegal sewage releases into the Susquehanna River and Paxton Creek either immediately or according to any mandatory deadline or schedule;
- 2) Fails to require the infrastructure upgrades, including the creation of storage capacity, needed to meaningfully reduce CSO discharges;

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<sup>11</sup> EIP, "Sewage Overflows in Pennsylvania's Capital" 2 & n.8-9 (Aug. 22, 2019), <https://environmentalintegrity.org/wp-content/uploads/2019/08/PA-Sewage-Report-Final.pdf>.

<sup>12</sup> *Id.*

<sup>13</sup> *Id.* at 1 (citing Capital Region Water, "Semiannual Report on Consent Decree Implementation, July 1, 2018 to Dec. 31, 2018" (released Mar. 2019), <https://capitalregionwater.com/wp-content/uploads/2019/04/CRWCh94-SemiAnn-Rpt-2018.pdf>).

<sup>14</sup> *Id.* (citing EPA, Fact Sheet: "Why Control Sanitary Sewer Overflows?" (accessed Aug. 15, 2019), [https://www.epa.gov/sites/production/files/2015-10/documents/sso\\_casestudy\\_control.pdf](https://www.epa.gov/sites/production/files/2015-10/documents/sso_casestudy_control.pdf)).

<sup>15</sup> *Id.* at 1.

<sup>16</sup> *Id.*

- 3) Contemplates heavy reliance on more affordable but less effective green infrastructure measures to mitigate pollution impacts in lieu of requiring CRW to make the structural improvements that would resolve and prevent future violations; and
- 4) Fails to require water quality monitoring as a measuring stick of progress.<sup>17</sup>

In short, the 2015 Partial Consent Decree does not and cannot, despite incorporating the expenditure of significant funding, provide a long-term solution that will actually keep raw sewage out of the waterways in our Commonwealth's capital.

As a result of failure of the 2015 Partial Consent Decree to require CRW to modernize its infrastructure or impose hard deadlines for such improvements, CRW's LTCP—despite costing Harrisburg ratepayers \$315 million over the course of 20 years—does *not* require significant system upgrades. The plan will essentially only provide for maintenance and minor improvements to allow continued use of existing facilities and continued discharges of raw sewage, in perpetuity. This represents a short-term, unsustainable fix, and an expensive and ineffective one at that. The plan, if successful, would reduce combined sewer discharges by about 500 million gallons per year,<sup>18</sup> or about 60%, from a current average of 789 million gallons per year (according to CRW prior to including the increased 2018 discharge numbers) to 332 million gallons per year.<sup>19</sup> This is a paltry reduction based on the current average, and is especially insufficient given that climate change will likely increase the frequency and intensity of storms in the next 20 years, so the total reduction will likely be much lower than 60%. CRW admits that the majority of the \$315 million would be going to simply make repairs to the existing, failing infrastructure to address areas of “deferred maintenance” and “preserve system reliability,” with the remainder going toward local, neighborhood, and green infrastructure projects.<sup>20</sup> Covering a leaky bucket with Band-aids will only hold so long. It is also a waste of Band-aids.

Due to lax requirements in the 2015 Partial Consent Decree and based heavily upon CRW's own financial capability assessment, which concluded that it would otherwise constitute a “high financial burden” under federal guidelines for Harrisburg to expend additional funds,<sup>21</sup>

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<sup>17</sup> Is it worth noting that the 2015 Partial Consent Decree requires CRW to report CSOs, but CRW has not been reporting them consistently. It is critical that the public be informed of CSOs as the consent decree is being fulfilled and that the final CD requires such reporting, and that the DEP actively and stringently enforces noncompliance with CSO reporting requirements.

<sup>18</sup> *Id.* at ES-4.

<sup>19</sup> *Id.*; EIP, “Sewage Overflows in Pennsylvania’s Capital” 3 (Aug. 22, 2019), <https://environmentalintegrity.org/wp-content/uploads/2019/08/PA-Sewage-Report-Final.pdf>.

<sup>20</sup> Capital Region Water, City Beautiful H2O, Civil Action No. 1:15-cv-00291-WWC: Long Term Control Plan, at ES-3 (Mar. 29, 2018) (“A 20-year financial analysis concluded that a total of approximately \$315 million in capital projects (\$253 million in 2017 dollars) could be funded by Capital Region Water over a 20-year period (\$225 million in the first 10 years and \$90 million in the next) while keeping the affordability threshold at or just below the high financial burden threshold. A portion of this total 20-year investment will be needed to continue to address decades of deferred maintenance (prior to CRW ownership and operation) and to preserve system reliability (\$214 million), whereas the remaining portion of this capital funding capacity (\$101 million) will be available for local, neighborhood, green stormwater infrastructure (GSI) projects.”).

<sup>21</sup> Capital Region Water, City Beautiful H2O, Civil Action No. 1:15-cv-00291-WWC: Long Term Control Plan, at ES- 2 (Mar. 29, 2018) (“Capital Region Water has already determined that approximately \$113 million (escalated), or \$102 million (in 2017 dollars) is required to fund high-priority projects to rehabilitate the Advanced Wastewater Treatment Facility and the conveyance system. This leaves only approximately \$112 million (escalated), or \$83

this long-term plan will not produce legally mandated results. Neighboring cities have had consent decrees that not only levied penalties against the public authority for Clean Water Act violations – which Harrisburg’s lacks – but required the revamping of those cities’ antiquated sewer systems to resolve CSO discharges to a much greater extent.

## **II. Financial Considerations**

Of course, funding is a critical component of an improved consent decree and LTCP for Harrisburg. Harrisburg’s financial analysis should consider whether more significant pollution reductions could be achieved with smaller or phased construction projects. Cities like Portland, Oregon have been able to achieve dramatic CSO reductions without sacrificing river health by evaluating costs based on whether additional incremental pollution reductions would significantly improve river health. Portland’s financial analyses projected that eliminating 100% of overflows would have doubled the project cost without significantly improving river health, but found that spending half that amount resulted in 94% and 99% reductions in CSOs in the two target waterways without sacrificing river health. Thus, the city, in collaboration with the state and EPA, approved a much lower-cost plan with major environmental benefits.<sup>22</sup> Harrisburg’s financial analysis should, likewise, consider how much it would cost to achieve various levels of pollution reductions and consider whether re-allocating funding slated to maintain or repair existing CSOs could achieve greater pollution reductions if slated for construction projects geared toward eliminating the need for the CSO in the first place.<sup>23</sup>

In addition to considering a variety of pollution reduction options and considering whether to re-apportion some of the \$315 million for the first phases of critical upgrades, the Governor’s office should also work to secure funding from the State to make the changes in infrastructure necessary to modernize Harrisburg’s outdated wastewater infrastructure.

Governor Wolf just recently announced a \$119 million investment in water infrastructure projects in 18 Pennsylvania cities that included wastewater infrastructure, but Harrisburg was conspicuously absent from this list.<sup>24</sup> Harrisburg is the state capital and much of the sewage from the city comes from state buildings and operations. Given this, the financial capability assessment needs to look beyond the city and consider the obligation the state has to support its capital, and the state needs to contribute significantly to the modernization of Harrisburg’s sewage system. It was only because of special funding from the Virginia General Assembly that Alexandria, VA, for example, recently launched a major construction effort to fix its CSO

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million (in 2017 dollars) of additional capital funding capacity over the next 10 years before the level of high financial burden is reached according to Federal guidelines. This is why Capital Region Water is pursuing the maximum amount of schedule relief possible from the US-EPA for Program Plan implementation and why an implementation plan of longer than 20-years is justified.”).

<sup>22</sup> City of Portland, Oregon, Combined Sewer Overflows (CSOs), <https://www.portlandoregon.gov/bes/article/398740> (last accessed Feb. 10, 2020).

<sup>23</sup> DEP should consider whether an independent, third-party should be required to provide a financial capability analysis.

<sup>24</sup> Press Release, “Governor Tom Wolf, Governor Wolf Announces \$119 Million Investment in Water Infrastructure Projects in 15 Counties” (Jan. 29, 2020), <https://www.governor.pa.gov/newsroom/governor-wolf-announces-119-million-investment-in-water-infrastructure-projects-in-15-counties/>.

overflow problem into the Potomac River.<sup>25</sup> A small city with limited ability to pay like Harrisburg should not be expected to cover the entire cost of upgrading its system to reduce CSO overflows, especially since it is a capital city dominated by State buildings. The state General Assembly should pitch in to help the state capital and—at the very least—upgrade the pipes leading directly from the State Government Complex and the Governor’s Residence into the Susquehanna River. That seems like a state responsibility.

### **III. Proposed Terms for a Final Consent Decree to Address Harrisburg’s Sewage Discharge Problems**

CRW’s Consent Decree must be swiftly revamped and finalized to reflect best practices, ensure the protection of public health, and deliver a meaningful reduction in discharges of untreated sewage into the Susquehanna River, the largest tributary to the Chesapeake Bay. Thankfully, neighboring cities have undertaken or continue to undertake similar overhauls to their aging sanitary and storm sewer systems and we can look to those consent decree requirements that have been successful, or are proving successful, and incorporate them into a final consent decree for Harrisburg.

The consent decrees reviewed by EIP with this goal in mind include the city of Williamsport<sup>26</sup> and the city of Scranton,<sup>27</sup> which are also in the Middle District of Pennsylvania, and the city of Lancaster.<sup>28</sup> We also reviewed the consent decree for Washington, DC.<sup>29</sup>

#### *a. Immediate Action to Address Dry Weather Overflows*

While the 2015 Partial Consent Decree prohibits dry weather overflows and requires immediate notification when they occur,<sup>30</sup> it falls short of other consent decrees because it fails to require immediate remedial action to address such overflows. For example, the consent

<sup>25</sup> City of Alexandria, VA, VPDES Permit No. VA0087068 Combined Sewer System Annual Report No. 23 for 2017, at 12-10 (Mar. 2018), <https://www.alexandriava.gov/uploadedFiles/tes/oeq/info/CSS%20Annual%20Report%20No.%2023%20for%202017.pdf> (“This project includes \$1,000,000 in funding for FY 2018 to ramp up the City’s efforts for planning and implementing work at the four CSO’s. The City is assuming both interjurisdictional contributions (\$47.5 million) from Fairfax County and State aid (\$45 million). The cities of Richmond and Lynchburg received significant state aid to help offset a portion of their CSO project costs.”).

<sup>26</sup> United States v. Williamsport Sanitary Authority, Civil Action No., Consent Decree (M.D. Pa, June 22, 2010), <https://www.epa.gov/sites/production/files/2013-09/documents/williamsport-cd.pdf> [hereinafter Williamsport CD] (addressing violations from the Central and West Plants, NPDES Permit Nos. PA0027057 and PA0027049).

<sup>27</sup> United States v. City of Scranton, Civil Action No. 3:CV-09-1873, Consent Decree (M.D. Pa, Dec. 13, 2012), <https://www.epa.gov/sites/production/files/documents/scrantonsewer-cd.pdf> [hereinafter Scranton CD] *as amended* by United States v. City of Scranton, Civil Action No. 3:CV-09-1873, Amended Consent Decree (Oct. 27, 2016), [https://elr.info/sites/default/files/doj-consent-decrees/united\\_states\\_v\\_sewer\\_authority\\_of\\_scranton.pdf](https://elr.info/sites/default/files/doj-consent-decrees/united_states_v_sewer_authority_of_scranton.pdf) [hereinafter Scranton Amended CD].

<sup>28</sup> United States v. City of Lancaster, Civil Action No. 17-cv-5684, Consent Decree (E.D. Pa, Dec. 20, 2017), <https://www.epa.gov/sites/production/files/2017-12/documents/cityoflanasterpa.pdf> [hereinafter Lancaster CD].

<sup>29</sup> Anacostia Watershed Society v. District of Columbia Water and Sewer Authority, Civil Action No. Civil Action No. 1:OOCV00183TFH, First Amendment to Consent Decree (D.D.C., May 19, 2015), <https://www.epa.gov/sites/production/files/2015-05/documents/firstamendment-dcwasas-cd.pdf> [hereinafter DC Amended CD]

<sup>30</sup> 2015 Partial Consent Decree, at 27.

decree for the City of Lancaster requires that, in the event of a dry weather overflow, Lancaster must “begin corrective action immediately” and perform daily inspections until the overflow has been eliminated.<sup>31</sup>

*b. Infrastructure Changes*

At the heart of the changes needed in Harrisburg is a requirement to replace the dated sewage containment and conveyance systems that allow for continuing CSOs. Expending millions of dollars to only maintain the existing problematic system is not the best use of limited resources. The needed infrastructure changes can include several components, including adding pipe capacity and wastewater treatment plant capacity, constructing storage tanks to contain, rather than discharge, CSOs, and closing CSO outfalls. The specific requirements, with enforceable schedules and deadlines, must be incorporated into the final CD itself.

*i. Separating Portions of Harrisburg’s Stormwater and Sewage Systems*

The most obvious solution to CSOs in Harrisburg would be to separate the stormwater and sewage systems, either as a whole or portions thereof, in various phases. Some cities have been able to nearly eliminate CSOs through ambitious projects to separate the majority of their combined sewer systems. For example, the City of Portland, Oregon, completed its Big Pipe Project in 2011, a 20-year, \$1.4 billion effort to drastically reduce sewer overflows to the Willamette River and the Columbia Slough. The improvements eliminated 94% of combined sewer overflows to the Willamette River and 99% to the Columbia Slough and reduced CSO events from 50 per year to only 4 per year in the rainy season and one every 3 years in the dry season.<sup>32</sup>

Other consent decrees required nearby cities to separate portions of their combined sewer systems years ago. For example, in Washington, DC, a 2003 partial consent decree resulted in a number of CSO control measures being implemented that included the separation of previously combined stormwater and wastewater sewers in the Anacostia and Rock Creek sewersheds, which was already completed prior to the first amendment of that CD in 2015, and the 2015 DC Amended CD requires additional separations of CSSs and subsequent elimination of the formerly associated CSOs.<sup>33</sup>

In Harrisburg, separating the entire system all at once would be cost prohibitive, but some high-priority portions of the system should be separated, supplemented by other measures to reduce overflows such as building additional storage capacity to prevent overflows elsewhere in the system. Harrisburg’s sewer system has several interceptors in its conveyance system; upgrading high-priority portions of the segments that have combined sewer systems to have separate sanitary and stormwater sewers could be phased over time depending on funding.

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<sup>31</sup> Lancaster CD, at 35, ¶ 42(c).

<sup>32</sup> City of Portland, Oregon, Combined Sewer Overflows (CSOs), <https://www.portlandoregon.gov/bes/article/398740> (last accessed Feb. 10, 2020).

<sup>33</sup> See DC Amended CD, at 4, 19, 20.

ii. Measures to Increase Wastewater Treatment Plant and Pipe Capacity to Collect, Store, and Treat More Sewage Prior to Discharging

In addition to separating critical sections of the combined system, there are also many upgrades short of a complete bifurcation that Harrisburg should undertake to reduce frequency and/or flow volumes of CSOs, including constructing CSO storage tanks and/or tunnels and increasing treatment plant, pumping, and conveyance capacity and pipe size.

For example, the Williamsport CD required, within three years of the date the CD was signed, an overhaul of the CSOs and several upgrades and increases in system capacity to reduce or eliminate CSOs. These include: 1) plant modifications to allow the WWTP to achieve greater flow capacity, from 14 MGD to 21 MGD; 2) replacing the 12-inch pipe connecting one CSO regulator to an interceptor with an 18-inch pipe; 3) constructing an overflow wet well and pumping system to feed up to 25 MGD of wet weather overflow through new piping into a CSO tank; and 4) constructing a new 2 million gallon CSO storage tank for the peak wet weather over flow from the new pumping and piping systems.<sup>34</sup>

The Washington, DC sewage system upgrades required by the DC Amended CD include (in addition to separation of CSSs) construction of one storage/conveyance tunnel with a storage capacity of 105 million gallons to collect and convey combined sewerage from thirteen CSO outfalls, with the collected wastewater then conveyed to the treatment plant for treatment and discharge through an NPDES-permitted point source, construction of another storage/conveyance tunnel with a 157 million gallon capacity aimed at eliminating another three outfalls (except if needed for isolation/repair of the tunnel), and construction of another storage/conveyance tunnel with a 30 million gallon capacity aimed at storing and conveying the combined sewage currently discharging through four CSOs and conveying it to a treatment plant.<sup>35</sup>

iii. Closure/Elimination of CSOs

Requiring other infrastructure changes to reduce CSOs must be complemented by provisions in the final CD to require the identification and closure of individual CSOs that are found to be the most chronic sources of dischargers.

For example, the DC Amended CD resulted in the elimination of several CSO outfalls after the former combined sewage area tributaries were separated, and the DC Amended CD requires the construction of large storage/conveyance tunnels that will eliminate 16 CSO outfalls.<sup>36</sup>

<sup>34</sup> Williamsport CD, at 23–25, ¶ 21(e).

<sup>35</sup> DC Amended CD, at 15–19.

<sup>36</sup> DC Amended CD, at 15–17, 20.

iv. Green Infrastructure to Complement, but Not Replace, System Upgrades

Neighboring cities' CDs allow for green infrastructure projects (tree planting, etc.) as alternative or complementary measures for reducing CSO discharges but are not the primary means of reducing CSOs. The 2015 Partial Consent Decree proposes green infrastructure improvements as a primary means of reducing CSO discharges rather than an option for achieving additional reductions in addition to gray infrastructure changes. This approach ignores and de-prioritizes the critical gray infrastructure upgrades required to drastically reduce the flow of untreated sewage into waterways. The Williamsport CD requires infrastructure projects and does not mention green infrastructure.<sup>37</sup> The Lancaster CD does allow for green infrastructure measures to be included as it had already adopted a green infrastructure plan prior to lodging, but such measures were to be employed in addition to "Gray Infrastructure Control Measures" (e.g., construction of new infrastructure), and the Lancaster CD expressly requires that if the authority wanted to continue using green infrastructure measures, it could only do so subject to making required demonstrations that these green infrastructure measures would curb CSOs to the same extent as or better than gray infrastructure measures.<sup>38</sup>

The 2012 Scranton CD does require an evaluation of Green Infrastructure Measures (with an evaluation deadline of 5 years) and, like the 2015 Partial Consent Decree, allows the Authority, after the evaluation, to submit a modification to EPA and DEP to revise their LTCP to alter their CSO controls to incorporate Green Infrastructure measures.<sup>39</sup> However, the 2012 Scranton CD requires that a proposed modification request include the following detailed information:

If the proposed modification seeks to alter the size of any CSO control in the LTCP, the proposed modification must also include reliable computer modeling and other evidence sufficient to demonstrate that (1) the proposed Green Infrastructure Measures will result in a reduction of wet weather flows into the Combined Sewer System; (2) during future wet weather events the SSA will continue to achieve such flow reductions; and (3) as a result of the flow reductions achieved as a result of the proposed Green Infrastructure Measures, the proposed modification of the LTCP will achieve the same or better performance, in terms of gallons controlled and the number of CSO activations in a typical year, as the unmodified LTCP.<sup>40</sup>

The final CD, should green infrastructure measures be incorporated as one approach to reducing overflows, must similarly require such measures to achieve and empirically demonstrate the same or better performance as gray infrastructure measures. Green Infrastructure can be a useful tool to reduce stormwater runoff, but it should be used in addition to—not in replacement of—sewage system improvements that are guaranteed and absolutely necessary to

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<sup>37</sup> See generally Williamsport CD.

<sup>38</sup> Lancaster CD, at 31–32.

<sup>39</sup> Amended Scranton CD, at 12.

<sup>40</sup> *Id.* at 12–13.



halt or reduce the discharge of human waste into the Susquehanna River and the impaired Paxton Creek.

*c. Limits on Combined Sewer Overflows or Requirements to Close Specific CSOs*

Several CDs required more aggressive limits on CSOs. For example, the Scranton CD requires Scranton's LTCP to select a remedy for CSOs that will result in no more than 4 overflows/year to non-channelized tributaries of the Lackawanna River or its tributaries and no more than 9 overflows/year to the Lackawanna River and the channelized tributaries thereto.<sup>41</sup> The 2015 Partial Consent Decree for the city of Harrisburg has no requirements for the LTCP to limit the ultimate number of discharge events or volume of waste discharged from CSOs. The final CD must include this requirement.

*d. Improved Monitoring Requirements*

The final CD must include rigorous monitoring requirements to ensure that all required measures aimed at reducing CSO overflows and other discharges of sanitary wastewater are in fact effective. No matter what solutions DEP requires CRW to undertake in Harrisburg, it should also require bacteria monitoring in the Susquehanna River directly downstream and upstream of Harrisburg's CSOs to ensure that the fecal contamination problem is reduced over time and that the taxpayer dollars invested in this project are well-spent. If the testing does not show an improvement, then DEP and CRW should be required, as per the CD, to go back and figure out a more effective and timely way to solve the problem. Long-term monitoring must continue until all constituents of concern return to safe levels.

For example, the Scranton CD requires that the LTCP not simply just evaluate flow and devise a water quality monitoring plan, which the 2015 Partial Consent Decree for Harrisburg does,<sup>42</sup> but requires that the monitoring plan ensure compliance with EPA's 1994 CSO Policy and verify compliance with water quality standards, protection of designated uses, and the effectiveness of CSO controls. The Scranton CD states that the LTCP must:

Include a post construction monitoring plan ("PCMP"), which must also meet the requirements of the CSO Policy, including the Policy's requirements that it be "adequate to verify compliance with water quality standards and protection of designated uses as well as to ascertain the effectiveness of the CSO controls" and that it "details the monitoring protocols to be followed, including the necessary effluent and ambient monitoring and, where appropriate, other monitoring protocols such as biological assessments, whole effluent toxicity testing, and sediment sampling."<sup>43</sup>

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<sup>41</sup> Amended Scranton CD, at 15.

<sup>42</sup> 2015 Partial Consent Decree ¶¶ 15–17.

<sup>43</sup> Scranton CD, at 15.

*e. Enforceable Deadlines Set Forth in the Consent Decree Itself*

In addition to ensuring the final consent decree contains enforceable requirements for improving infrastructure that will decrease discharges of untreated wastewater, the consent decree must also be finalized quickly and contain hard, enforceable timelines for achieving infrastructure and pollution reduction benchmarks.

The 2015 Partial Consent Decree has very few concrete deadlines for construction projects. Most of the deadlines are tied to submittals of reports (such as the CSO Activation Monitoring Pilot (“CAMP”) Study) or completion of schedules with open-ended deadlines.<sup>44</sup> The few requirements related to implementing construction projects mostly relate to deferred maintenance, such as identifying and repairing sinkholes within three years of lodging and completing high priority structural integrity changes to the Front Street Interceptor by a date certain.<sup>45</sup> In contrast, the other CDs we reviewed contain concrete, enforceable deadlines in the CD that drive compliance with the terms of the CD and ensure that the work will be timely completed, which also protects against project cost escalations that negatively impact ratepayers.

*i. Ultimate deadline for implementation of Long-Term Control Plan*

Although there are some deadlines for some limited construction projects in the 2015 Partial Consent Decree, the LTCP provisions of this CD do not include a deadline for implementation of the LTCP as a whole, which makes it weaker than other Consent Decrees, such as the Scranton and Lancaster CDs, which both require implementation of the updated LTCP within specified timelines.

The Williamsport CD, signed in June 2010, sets forth specific construction upgrades to control CSOs and requires that they be completed by June 30, 2013. The CD itself further requires that by November 2013 the authority be in full compliance with their NPDES permit and that all upgrades be operational.

Even the Lancaster CD requires that “[a]ll CSO Control Measures shall be constructed and commence operation as soon as possible, but in no event later than twenty (20) years after the date of lodging.”<sup>46</sup>

*ii. Deadlines to close specific CSOs*

Any CSOs identified as targets for closure must be required to close by a date certain as other infrastructure improvements are implemented. For example, the DC Amended CD included, for each construction project required (such as construction of a tunnel), separate deadlines for awarding a contract for a detailed design, awarding a construction contract, and completing construction, after which the associated CSOs would be eliminated or closed by a date certain.<sup>47</sup>

<sup>44</sup> 2015 Partial Consent Decree, at 49–50.

<sup>45</sup> *Id.* at 48.

<sup>46</sup> Lancaster CD, at 32, ¶ 35.

<sup>47</sup> *See, e.g.*, DC Amended CD at 16–22.

*f. Penalties*

DEP and EPA's 2015 Partial Consent Decree has not imposed penalties for the violations alleged in the Complaint, whereas all of the other CD's review imposed civil penalties. The Williamsport CD imposed a \$320,000 penalty to be paid within 30 days of lodging,<sup>48</sup> the Lancaster CD imposed a \$135,000 penalty to be paid within 30 days of the effective date,<sup>49</sup> and the original Scranton CD imposed a penalty of \$170,000 plus interest, to be paid within 30 days of the effective date.<sup>50</sup> The 2003 partial consent decree for Washington DC that pre-dated the DC Amended CD imposed a \$250,000 penalty and required an additional \$2 million in expenditures for storm water pollution prevention projects, including \$1.7 million for low impact development projects (*i.e.*, green infrastructure projects), and \$300,000 for a green roof demonstration project.<sup>51</sup>

A final CD for the City of Harrisburg, following an appropriate ability to pay analysis as per EPA's Combined Sewer Final Overflows Guidance for Financial Capability Assessment and Schedule Development,<sup>52</sup> should assess a penalty that at a minimum recovers the economic benefit of noncompliance, including the time that has accrued since entering into the 2015 Partial Consent Decree. However, the penalty owed could be mitigated by additional expenditures on system improvements, green infrastructure projects, or other pollution reduction projects to offset pollution from Harrisburg's sewer system.

As part of the civil penalty consideration, DEP and EPA should evaluate whether supplemental environmental projects to restore, protect, or clean up City Island Park Beach or other priority areas along the Susquehanna River and Paxton Creek could help offset the damage to the local ecosystem due to pathogens and other pollutants from the city's CSO problems. For example, the Lancaster CD includes a supplemental environmental project that would restore "1,350 linear feet of urban stream channel, reconnect wetlands to the Conestoga River, and establish additional habitat for micro- and macro-biota, thereby enhancing water quality," "improve water quality by reconnecting existing springs, seeps and local separate drainage to pocket wetlands and a restored natural stream channel," and "reduce localized flooding from unmanaged impervious areas by providing additional stream capacity and flow rate attenuation above the confluence of the Conestoga River." The Lancaster CD estimates the cost of the SEP to be between \$1.8-\$2.3 million, which offsets in part the civil penalty owed. The Lancaster CD requires completion of the SEP within 8 months of receipt of the last permit needed to complete the SEP.<sup>53</sup> EIP and LSRA are eager to explore potential options that could help offset the pollution caused by CRW's and the City of Harrisburg's chronic sewage overflows.

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<sup>48</sup> Williamsport CD, at 15.

<sup>49</sup> Lancaster CD, at 43.

<sup>50</sup> Scranton CD, at 20–21.

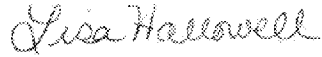
<sup>51</sup> U.S. Dep't. Justice, "Partial Settlement Reached in Lawsuits as WASA Agrees to Steps to Reduce Sewage Overflow" (June 25, 2003), [https://www.justice.gov/archive/opa/pr/2003/June/03\\_enrd\\_381.htm](https://www.justice.gov/archive/opa/pr/2003/June/03_enrd_381.htm) (accessed Feb. 10, 2020).

<sup>52</sup> Office of Water, EPA, Combined Sewer Final Overflows Guidance for Financial Capability Assessment and Schedule Development, Final (Feb. 1997), EPA Doc. No. EPA-832-B-97-004, *available at* [https://www.epa.gov/sites/production/files/2015-10/documents/csofc\\_0.pdf](https://www.epa.gov/sites/production/files/2015-10/documents/csofc_0.pdf).

<sup>53</sup> City of Lancaster CD, Appendix F, Supplemental Environmental Project.

Thank you for inviting our non-profit organizations to the table to discuss the terms we believe are of critical importance in a final consent decree. We look forward to meeting with you in March 2020 to discuss in more detail ways for your administration to revise and finalize an improved and complete Consent Decree to address ongoing discharges of untreated sewage in Harrisburg.

Sincerely,



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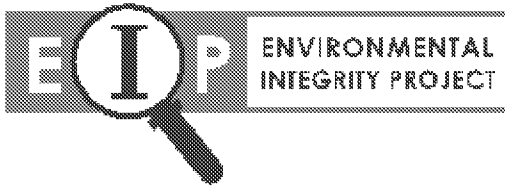
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# Exhibit F



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September 18, 2020

*Via FOIAonline submission*

Regional Freedom of Information Officer  
U.S. EPA, Region 3  
1650 Arch Street (3RC70)  
Philadelphia, PA 19103  
(215) 814-2050

**Re: Freedom of Information Act Request for Records Relating to Status of the Consent Decree in the matter of *United States and Commonwealth of Pennsylvania Department of Environmental Protection v. City of Harrisburg; Capital Region Water*, Civil Action No. 1:15-cv-00921-WWC (M.D. Pa.) relating to alleged violations of the Clean Water Act from Harrisburg's Municipal Waste Water Treatment Plant and Conveyance System**

Dear FOIA Officer:

Pursuant to the Freedom of Information Act (FOIA), 5 U.S.C. § 552, the Environmental Integrity Project requests any and all records, from September 18, 2019 through the present, in the possession, control, or custody of the U.S. Environmental Protection Agency ("EPA") regarding the matter of *United States and Commonwealth of Pennsylvania Department of Environmental Protection v. City of Harrisburg; Capital Region Water*, Civil Action No. 1:15-cv-00921-WWC (M.D. Pa.) relating to alleged violations of the Clean Water Act from Harrisburg's Municipal Waste Water Treatment Plant and Conveyance System, for which a partial consent decree was lodged on February 10, 2015, as follows:

1. Records related to the status, progress, and/or target date(s) for completion of a new, modified and/or final consent decree; and
2. Records related to any and all meetings, phone calls, or video conference calls within this time frame between or among parties to the Partial Consent Decree, including any records relating to meeting dates, meeting attendees, agendas, email invitations to meetings, calendars, and any other records containing any information related to meetings among or between parties to the consent decree regarding the implementation, status, completion date, or drafting of a new, modified and/or final version of the consent decree.

Given the constraints of in-person reviews amidst the current COVID-19 restrictions, we request that all responsive documents be provided in electronic format.

## **Format of Records**

For purposes of this request, the term “records” means information of any kind, including, but not limited to, documents (handwritten, typed, electronic or otherwise produced, reproduced, or stored), letter, e-mails, facsimiles, memoranda, correspondence, notes, databases, drawings, graphs, photographs, minutes of meetings, electronic records of meetings, and any other compilation of data from which information can be obtained.

## **Claims of Exemption from Disclosure**

If you regard any documents as exempt from required disclosure under FOIA, please exercise your discretion to disclose them nevertheless, keeping in mind that FOIA “is the most prominent expression of a profound national commitment to ensuring an open Government” and that “[a]ll agencies should adopt a presumption in favor of disclosure.” President Barack Obama, Memorandum For the Heads of Executive Departments and Agencies: Freedom of Information Act, 74 Fed. Reg. 4, 863 (Jan. 26, 2009).

In the alternative, after careful review for the purpose of determining whether any of the information is exempt from disclosure, please provide all reasonably non-exempt portions of records and communications as required by FOIA.

Should you elect to invoke an exemption, please provide the required full or partial denial letter and sufficient information to determine whether or not there may be grounds to appeal EPA’s decision. In accordance with the minimum requirements and regulations of due process, this information should include:

- Basic factual material, including the originator, date, length, and addresses of the withheld items.
- Explanations and justifications for denial, including the identification of the exemption applicable to the withheld information or portions of the information found to be subject to exemption, and how each exemption applies to the withheld material.

## **Request for Fee Waiver**

Pursuant to FOIA, 5 U.S.C. § 552(a)(4)(A)(iii), and EPA’s implementing regulations, 40 C.F.R. § 2.107(l), we request that all charges incurred in connection with this FOIA request be waived. FOIA requires agencies to waive or reduce fees for requests “if disclosure of the information is in the public interest because it is likely to contribute significantly to public understanding of the operations or activities of the government and is not primarily in the commercial interest of the requester.” 5 U.S.C. § 552(a)(4)(A)(iii). “[A]ll public interest groups...will be able to qualify for fee waivers and thereby obtain documents without charge if their requests meet the standard for waivers.” *McClellan Ecological Seepage Situation v. Carlucci*, 835 F.2d 1282, 1284 (9th Cir. 1987) (quoting 132 Cong. Rec. 29,696 (1986) (statement of Rep. English)). Congress intended the fee waiver provision to be “liberally construed in favor of waivers for noncommercial requesters.” *Judicial Watch, Inc. v. Rossotti*, 326 F.3d 1309, 1312 (D.C. Cir. 2003) (quoting 132 Cong. Rec. 27,190 (1986) (statement of Sen. Leahy)).

As discussed below, this FOIA request satisfies the two-pronged test for a fee waiver established in FOIA and outlined in EPA's implementing regulations because: (i) "disclosure of the information is in the public interest because it is likely to contribute significantly to public understanding of the operations or activities of government," and (ii) disclosure of the information "is not primarily in the commercial interest of the requester." 5 U.S.C. § 552(a)(4)(A)(iii); 40 C.F.R. § 2.107(l)(1). *See also* EPA, Requesting FOIA Fee Waivers, <https://www.epa.gov/foia/requesting-foia-fee-waivers> (accessed Sept. 17, 2020).

**A. Disclosure of the requested information is in the public interest because it will contribute significantly to public understanding of the operations or activities of government.**

Requesters qualify for the fee waiver because the requested information will "contribute significantly to public understanding of the operations or activities of the government." 5 U.S.C. § 552(a)(4)(A)(iii); *see also* 40 C.F.R. § 2.107(l)(1), (2). Specifically, our request meets each of the four factors that EPA considers with respect to the "public understanding" prong. *See* 40 C.F.R. § 2.107(l)(2).

1. **Factor 1. The subject of the request:** *Whether the subject of the requested records concerns "the operations or activities of the government." The subject of the requested records must concern identifiable operations or activities of the federal government, with a connection that is direct and clear, not remote.*

This request seeks records related to the operations or activities of the EPA, an independent executive agency of the federal government (as well as the Pennsylvania DEP and the City of Harrisburg and Capital Regional Water) regarding implementation of the 2015 partial consent decree and finalization of a final consent decree to address polluted discharges of sewer wastewaters from the City of Harrisburg and the timeframes thereof.

2. **Factor 2. The informative value of the information to be disclosed:** *Whether the disclosure is "likely to contribute" to an understanding of government operations or activities. The disclosable portions of the requested records must be meaningfully informative about government operations or activities in order to be "likely to contribute" to an increased public understanding of those operations or activities. The disclosure of information that already is in the public domain, in either a duplicative or a substantially identical form, would not be as likely to contribute to such understanding when nothing new would be added to the public's understanding.*

The principal purpose of this request is to better understand the process that EPA, in coordination with state and local agencies and authorities, is taking to implement and finalize a consent decree to address sewer wastewater discharges from the municipal sewage system for the City of Harrisburg. The measures being taken and the timeline for adoption of a final consent decree is important for the protection of health and the environment from discharges of bacteria,



fecal matter, and other dangerous substances into Pennsylvania's waters. The information sought is not otherwise in the public domain.

- 3. Factor 3. The contribution to an understanding of the subject by the public is likely to result from disclosure:** *Whether disclosure of the requested information will contribute to "public understanding." The disclosure must contribute to the understanding of a reasonably broad audience of persons interested in the subject, as opposed to the individual understanding of the requester. A requester's expertise in the subject area and ability and intention to effectively convey information to the public will be considered. It will be presumed that a representative of the news media will satisfy this consideration.*

The information requested is sought to better understand the EPA's process for implementing the 2015 consent decree for sewage wastewater discharges from the City of Harrisburg and the timeline and contents of the final consent decree, which EIP intends to share with the Lower Susquehanna Riverkeeper and interested members of the public as well as to the media for broad public understanding of the process and timelines. EIP is a non-profit, non-partisan watchdog organization that advocates for effective enforcement of environmental laws. Comprised of former EPA enforcement attorneys, EIP is engaged in educating the public about environmental issues and/or taking legal or other actions necessary to ensure compliance with federal environmental laws. EIP frequently uses information it obtains through FOIA requests to analyze and simplify public information on environmental issues through the issuance of reports that are covered by media sources. In fact, EIP has a long, demonstrated, and continuing history of expertise and contribution to the public understanding on a number of topics pertaining to governmental operations. In furtherance of this, EIP distributes information via regularly published reports and press releases, its frequently updated website (<http://www.environmentalintegrity.org>) and social media platforms (<https://twitter.com/EIPOnline>; <https://www.facebook.com/EnvIntegrity/>), communication with partner organizations and outside media outlets, and legal and administrative documents such as public comments on agency rulemakings and permits and briefs and documents filed in litigation. EIP intends to make the same dissemination in this instance. More specifically, EIP plans to publish the records and our findings on its websites and to disseminate the materials to both national media sources and local outlets in Pennsylvania and the Chesapeake Bay watershed. EIP also intend to email the materials to national, regional, and local partner organizations for further dissemination to their members.

In fact, EIP has already released several reports concerning sewage discharges from the City of Harrisburg and the information collected will be used to further educate the public. EIP intends to convey this information to the public, including citizens, elected officials, policy makers, and the regulated community, in reports, position papers, interactions with the press, and other means of distribution. The Environmental Integrity Project uses its expertise to gather and publicly distribute information related to human health and the environment in a manner that is clear, transparent, and accurate.

- 4. Factor 4. The significance of the contribution to public understanding:** *Whether the disclosure is likely to contribute "significantly" to public understanding of*

*government operations or activities. The public's understanding of the subject in question, as compared to the level of public understanding existing prior to the disclosure, must be enhanced significantly by the disclosure. The FOI Office will not make value judgments about whether information that would contribute significantly to public understanding of the operations or activities of the government is "important" enough to be made public.*

There is no publicly available database or other information source that is currently disclosing the progress of EPA, DEP, the City of Harrisburg, and Capital Region Water on finalizing a consent decree for sewage discharges for the City of Harrisburg, so obtaining any information on this process will contribute "significantly" to public understanding of government activities with regard to this consent decree process.

**B. Disclosure of the information "is not primarily in the commercial interest of the requester."**

As to FOIA's second prong for fee waivers—disclosure of the information "is not primarily in the commercial interest of the requester"—EPA regulations set out two factors for the agency to consider. 40 C.F.R. § 2.107(l)(3). This request clearly meets both of these factors.

1. **Factor 5. The existence and magnitude of a commercial interest:** *Whether the requester has a commercial interest that would be furthered by the requested disclosure. The FOI Office will consider any commercial interest of the requester or of any person on whose behalf the requester may be acting, that would be furthered by the requested disclosure. Requesters will be given an opportunity in the administrative process to provide explanatory information regarding this consideration.*

The information delivered in response to this request will not be used for any commercial purpose, business, trade, or profit. The requestor is a public interest organization that does not have a commercial interest in this material.

2. **Factor 6. The primary interest in disclosure:** *Whether any identified commercial interest of the requester is sufficiently large, in comparison with the public interest in disclosure that disclosure is "primarily in the commercial interest of the requester." A fee waiver or reduction is justified where the public interest standard is satisfied and that public interest is greater in magnitude than that of any identified commercial interest in disclosure. FOI Offices ordinarily will presume that when a news media requester has satisfied the public interest standard, the public interest will be the interest primarily served by disclosure to that requester. Disclosure to data brokers or others who merely compile and market government information for direct economic return will not be presumed to primarily serve the public interest.*

This factor is satisfied because the Environmental Integrity Project has no commercial interest in disclosing the records sought; EIP's interest in this material is a public interest in

obtaining and disseminating important information that will affect public health and the environment regarding the process and progress of EPA's finalization of a consent decree to address untreated sewage discharges from the City of Harrisburg.

For the above reasons, this request satisfies the fee waiver standards set forth in 40 C.F.R. § 2.107. However, in the event that EPA does not grant the requested waiver, please provide information concerning the specific basis for such a decision as required by EPA regulations as well as an estimate of the cost of the agency's response.

Please provide responsive documents in an electronic format.

Thank you for your prompt attention to this matter. Should you need further information or have any questions concerning this request or that would allow you to clarify or limit this request, please do not hesitate to contact me.

Sincerely,



Lisa Hallowell  
Senior Attorney  
Environmental Integrity Project  
1000 Vermont Avenue NW, Suite 1100  
Washington, DC 20005  
(202) 294-3282  
[Lhallowell@environmentalintegrity.org](mailto:Lhallowell@environmentalintegrity.org)



1000 Vermont Avenue, NW  
Suite 1100  
Washington, DC 20005  
Main: 202-296-8800  
Fax: 202-296-8822  
[www.environmentalintegrity.org](http://www.environmentalintegrity.org)

September 18, 2020

Via Electronic Mail to [EP-DEP-RTK@pa.gov](mailto:EP-DEP-RTK@pa.gov)

Agency Open Records Officer ("AORO")  
Southcentral Regional Office  
Pennsylvania Department of Environmental Protection ("DEP")  
DEP/BOS  
P.O. Box 8473  
Harrisburg, PA 17110-8473  
Phone: 717-214-3737

**Re: Right-to-Know-Law Request for Records Relating to Status of the Consent Decree in the matter of *United States and Commonwealth of Pennsylvania Department of Environmental Protection v. City of Harrisburg; Capital Region Water*, Civil Action No. 1:15-cv-00921-WWC (M.D. Pa.) relating to alleged violations of the Clean Water Act from Harrisburg's Municipal Waste Water Treatment Plant and Conveyance System**

Dear Agency Open Records Officer ("AORO"):

Pursuant to Pennsylvania's Right-to-Know Law, 25 Pa. Stat. Ann. § 67.101 *et seq.*, the Environmental Integrity Project requests any and all records, from September 18, 2019 through the present, in the possession, control, or custody of the Pennsylvania Department of Environmental Protection ("DEP") regarding the matter of *United States and Commonwealth of Pennsylvania Department of Environmental Protection v. City of Harrisburg; Capital Region Water*, Civil Action No. 1:15-cv-00921-WWC (M.D. Pa.) relating to alleged violations of the Clean Water Act from Harrisburg's Municipal Waste Water Treatment Plant and Conveyance System, for which a partial consent decree was lodged on February 10, 2015, as follows:

1. Records related to the status, progress, and/or target date(s) for completion of a new, modified and/or final consent decree; and
2. Records related to any and all meetings, phone calls, or video conference calls within this time frame between or among parties to the Partial Consent Decree, including any records relating to meeting dates, meeting attendees, agendas, email invitations to meetings, calendars, and any other records containing any information related to meetings among or between parties to the consent decree regarding the implementation, status, completion date, or drafting of a new, modified and/or final version of the consent decree.

Given the constraints of in-person reviews amidst the current COVID-19 restrictions, we request that all responsive documents be provided in electronic format.

### **Format of Records**

For purposes of this request, the term “records” means information of any kind, including, but not limited to, documents (handwritten, typed, electronic or otherwise produced, reproduced, or stored), letter, e-mails, facsimiles, memoranda, correspondence, notes, databases, drawings, graphs, photographs, minutes of meetings, electronic records of meetings, and any other compilation of data from which information can be obtained.

### **Claims of Exemption from Disclosure**

If you regard any documents as exempt from required disclosure, please exercise your discretion to disclose them nevertheless. In the alternative, after careful review for the purpose of determining whether any of the information is exempt from disclosure, please provide all reasonably non-exempt portions of records and communications.

Should you elect to invoke an exemption, please provide the required full or partial denial letter and sufficient information to determine whether or not there may be grounds to appeal the decision. In accordance with the minimum requirements and regulations of due process, this information should include:

- Basic factual material, including the originator, date, length, and addresses of the withheld items.
- Explanations and justifications for denial, including the identification of the exemption applicable to the withheld information or portions of the information found to be subject to exemption, and how each exemption applies to the withheld material.

### **Request for Fee Waiver**

EIP requests that DEP exercise its discretion to waive all charges incurred in connection with this RTKL request. EIP is a non-profit, non-partisan watchdog organization that advocates for effective enforcement of environmental laws. Comprised of former EPA enforcement attorneys, EIP is engaged in educating the public about environmental issues and/or taking legal or other actions necessary to ensure compliance with federal environmental laws. EIP frequently uses information it obtains through FOIA requests to analyze and simplify public information on environmental issues through the issuance of reports that are covered by media sources. In fact, EIP has a long, demonstrated, and continuing history of expertise and contribution to the public understanding on a number of topics pertaining to governmental operations. In furtherance of this, EIP distributes information via regularly published reports and press releases, its frequently updated website (<http://www.environmentalintegrity.org>) and social media platforms (<https://twitter.com/EIPOnline>; <https://www.facebook.com/EnvIntegrity/>), communication with partner organizations and outside media outlets, and legal and administrative documents such as public comments on agency rulemakings and permits and briefs and documents filed in litigation. EIP intends to make the same dissemination in this instance. More specifically, EIP plans to publish the records and our findings on its websites and to disseminate the materials to

both national media sources and local outlets in Pennsylvania and the Chesapeake Bay watershed. EIP also intend to email the materials to national, regional, and local partner organizations for further dissemination to their members.

The Environmental Integrity Project uses its expertise to gather and publicly distribute information related to human health and the environment in a manner that is clear, transparent, and accurate. In fact, EIP has already released several reports concerning sewage discharges from the City of Harrisburg and the information collected will be used to further educate the public. The information requested is sought to better understand the EPA's process for implementing the 2015 consent decree for sewage wastewater discharges from the City of Harrisburg and the timeline and contents of the final consent decree, which EIP intends to share with the Lower Susquehanna Riverkeeper and interested members of the public as well as to the media for broad public understanding of the process and timelines. EIP intends to convey this information to the public, including citizens, elected officials, policy makers, and the regulated community, in reports, position papers, interactions with the press, and other means of distribution.

Furthermore, the information delivered in response to this request will not be used for any commercial purpose, business, trade, or profit. EIP is a public interest organization that does not have a commercial interest in this material. EIP's interest in this material is a public interest in obtaining and disseminating important information that will affect public health and the environment regarding the process and progress of EPA's finalization of a consent decree to address untreated sewage discharges from the City of Harrisburg.

In the event that DEP does not grant the requested waiver, please provide information concerning the specific basis for such a decision as well as an estimate of the cost of the agency's response.

Again, please provide responsive documents in an electronic format.

Thank you for your prompt attention to this matter. Should you need further information or have any questions concerning this request or that would allow you to clarify or limit this request, please do not hesitate to contact me.

Sincerely,



Lisa Hallowell  
Senior Attorney  
Environmental Integrity Project  
1000 Vermont Avenue NW, Suite 1100  
Washington, DC 20005  
(202) 294-3282  
[Lhallowell@environmentalintegrity.org](mailto:Lhallowell@environmentalintegrity.org)

# Exhibit G



October 22, 2020

**VIA EMAIL: Lhallowell@environmentalintegrity.org**

Lisa Hallowell, Esquire  
Environmental Integrity Project  
1000 Vermont Avenue NW, Suite 1100  
Washington, DC 20005

RE: Right-to-Know Request Tracking Numbers: 2020-0568 (CO)  
2020-0568 (SC)

Dear Requester:

The Department of Environmental Protection's (DEP) Open Records Officer received your request and assigned it the tracking number listed above. This letter is DEP's final response to your request under the Pennsylvania Right-to-Know Law, 65 P.S. §§ 67.101-67.3104 (RTKL).

Please note that, where, as here, DEP determines that multiple DEP offices may potentially have responsive records, DEP assigns the request to each of those offices. DEP's final response(s) will list which of the assigned DEP offices are covered by that final response. It is possible that you may receive more than one final response to your request. It is also possible that a final response may cover more than one office.

Your request was assigned to the following offices: Central Office (CO) and the Southcentral (SC) Regional Office. For purposes of this final response, DEP's SC Regional Office is responding on behalf of itself. **The other office assigned to this request will be responding separately.**

A copy of your request and the modification are enclosed and incorporated into this response.

The DEP's offices have been closed since March 16, 2020 due to the COVID-19 pandemic. On May 29, 2020, the County where the DEP's Agency Open Records Officer is stationed moved to the yellow phase of the Governor's reopening plan. While the DEP's offices remain closed at this time, the DEP made its best efforts to respond to your RTKL request in a manner consistent with the Governor's pandemic mitigation plan.

On September 25, 2020, DEP notified you that it required an additional 30 days, until October 26, 2020, to respond to your request.

Your request is granted for the records in the SC Regional Office's possession and the records responsive to your request are attached to this final response. There is no charge since the response involves records DEP maintains in electronic format.



- 2 -

You have a right to appeal this response in writing to the Executive Director, Office of Open Records (OOR), 333 Market Street, 16<sup>th</sup> Floor, Pennsylvania 17101. If you choose to file an appeal you must do so within 15 business days of the mailing date of this response and must provide the OOR with (1) your RTKL request, (2) all DEP responses to your RTKL request, and (3) the reasons that you think DEP erred when it responded to your request.

An appeal form is available on the OOR website at  
<http://www.openrecords.pa.gov/Appeals/HowToFile.cfm>.

Sincerely,

*Andrea Blosser*

Andrea Blosser  
Assistant Regional Director

Enclosure

## Griffin Bird

---

**From:** r3foia@epa.gov  
**Sent:** Thursday, December 10, 2020 12:56 PM  
**To:** Lisa Widawsky Hallowell  
**Subject:** Final Disposition, Request EPA-R3-2020-007052  
**Attachments:** Other-20201208112604-Letter - Final Response 2020-7052.pdf;  
Other-20201203153006-Withholding Index EPA-R3-2020-007052.xlsx

EPA-R3-2020-007052 has been processed with the following final disposition: Partial Grant/Partial Denial.

Records were released to the public as a result of this request. You may retrieve these records immediately using the following link: [View Records](#) Over the next 2 hours, these records are also being added to FOIAonline's search pages, further enabling you to retrieve these documents associated with your FOIA request at any time.



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
**REGION III**  
**1650 Arch Street**  
**Philadelphia, Pennsylvania 19103-2029**

Ms. Lisa W. Hallowell  
Environmental Integrity Project  
1000 Vermont Avenue, NW, Suite 1100  
Washington, DC 20005

Re: Freedom of Information Act Request EPA-R3-2020-007052 – Final Response

Dear Ms. Hallowell:

This letter concerns the above-referenced FOIA request, received by the U.S. Environmental Protection Agency (EPA or Agency) on September 18, 2020, in which you requested records related to the City of Harrisburg's Capital Region Water. You will find records responsive to your request by visiting FOIAonline at <https://foiaonline.gov>.

Please be advised that some records are being partially withheld pursuant to the following:

5 U.S.C. § 552(b)(5), which exempts from mandatory disclosure records that are pre-decisional and deliberative and would harm Agency decision making if released or are documents prepared by, in consultation with or at the direction of, an attorney in contemplation of litigation;

5 U.S.C. § 552(b)(6), which permits the withholding of information in personnel, medical and similar files, the disclosure of which would constitute an unwarranted invasion of personal privacy; and

5 U.S.C. § 552(b)(7)(A), which permits the withholding of records or information compiled for law enforcement purposes to the extent that production of the information could reasonably be expected to interfere with enforcement proceedings.

This letter concludes our response to you. You may appeal this determination by email at [hq.foia@epa.gov](mailto:hq.foia@epa.gov), or by mail to the EPA's National FOIA Office, U.S. EPA, 1200 Pennsylvania Avenue, N.W. (2310A), Washington, DC 20460 or through FOIAonline if you are an account holder. If you are submitting your appeal by hand delivery, courier service, or overnight delivery, you must address your correspondence to 1200 Pennsylvania Avenue, N.W., WJC-N Building, Room 7309C, Washington, DC 20460.

Your appeal must be in writing, and it must be received no later than 90 calendar days from the date of this letter. The Agency will not consider appeals received after the 90-calendar-day limit. Appeals received after 5:00 p.m. EST will be considered received the next business day. The appeal letter should include the FOIA tracking number listed above. For quickest possible handling, the subject line of your email, the appeal letter, and its envelope, if applicable, should be marked "Freedom of Information Act Appeal."

If you need any further assistance or would like to discuss any aspect of your request, you may seek assistance from EPA's FOIA Public Liaison at [hq.foia@epa.gov](mailto:hq.foia@epa.gov) or call (202) 566-1667. You may also seek assistance from the Office of Government Information Services (OGIS). You may contact OGIS in any of the following ways: by mail, Office of Government Information Services, National Archives and

Records Administration, 8601 Adelphi Road, College Park, MD 20740-6001; email: [ogis@nara.gov](mailto:ogis@nara.gov); telephone: (202) 741-5770 or (877) 684-6448; or fax: (202) 741-5769. For all media inquiries, please contact [press@epa.gov](mailto:press@epa.gov).

If you have any questions, please contact Ms. Benita Graham, FOIA Project Manager, at (215) 814-5634 or [graham.benita@epa.gov](mailto:graham.benita@epa.gov).

Sincerely,

**KAREN  
MELVIN**

Digitally signed by  
KAREN MELVIN  
Date: 2020.12.08  
11:20:06 -05'00'

Karen Melvin, Director  
Enforcement & Compliance Division

# Exhibit H



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
1650 Arch Street  
Philadelphia, Pennsylvania 19103-2029

**CERTIFIED MAIL**  
**RETURN RECEIPT REQUESTED**

NOV 26 2019

Charlotte Katzenmoyer  
Chief Executive Officer  
Capital Region Water  
212 Locust Street, Suite 500  
Harrisburg, Pennsylvania 17101

Re: U. S., et al v. Capital Region Water, et al  
Civil Action No. 1:15-cv-00291-WWC (M.D. Pa)  
Demand for Stipulated Penalties

Dear Mr. Katzenmoyer:

The United States Environmental Protection Agency (EPA), in consultation with the Pennsylvania Department of Environmental Protection (PADEP) hereby demand the payment of stipulated penalties by Capital Region Water (CRW) for violations of the above-referenced Consent Decree (CD). Section X of the Consent Decree provides for the assessment of stipulated penalties and sets forth the amounts which may be assessed for each specific CD violation.

Paragraph 27 of the CD prohibits sanitary sewer overflows (SSOs). Paragraph 33.a. of the CD prohibits dry weather overflows (DWOs) from the Combined Sewer System. CRW has violated each of these CD provisions, on the dates shown in the attached Violations Chart.

From May 10, 2018 through August 6, 2019, CRW had 19 DWOs in violation of Paragraph 33.a. of the Decree, for which total stipulated penalties of \$14,500 may be assessed. From July 11, 2018 through March 21, 2019, CRW had six (6) SSOs in violation of Paragraph 27 for which total stipulated penalties of \$3,000 may be assessed.

EPA and PADEP have determined that we will pursue penalties for 11 of the 19 DWOs for the sum of \$10,500 and for two (2) of the six (6) SSOs for a penalty of \$1,000 for a total amount of \$11,500. See the enclosed penalty chart below.

According to Paragraph 58 of the CD, one half of the stipulated penalty amount, \$5,750 is to be paid to the United States and one half to the PADEP, within thirty (30) days this demand, in the manner specified in Paragraphs 58 a. and b.

Your cooperation in this matter is appreciated. If you have technical questions, please contact Mr. Steve Maslowski, Enforcement Officer at (215) 814-2371. If you have legal questions, please contact Ms. Pamela Lazos, Senior Assistant Regional Counsel, at (215) 814-2658.

Sincerely,

A handwritten signature in black ink, appearing to read "Karen Melvin", written in a cursive style.

Karen Melvin, Director  
Enforcement & Compliance Assurance Division

Enclosure:

cc: Nancy Flickinger, Esq., U.S. Department of Justice  
Fredric Andes, Esq.  
Pamela Lazos, Esq. EPA  
Janna Williams, Esq., PADEP  
Victor Landis, PADEP

### Summary of Consent Decree Violations by Capital Region Water

#### Dry Weather Overflows

| Date               | Violation Description  | Overflow Volume Gallons | CD Requirement and Penalty Amount Paragraph 55. a. |
|--------------------|--|-------------------------|--|
| May 10, 2018       | Water hydrant flushing that discharged out CSO 010   | Unknown                 | Paragraph 33.a<br>\$500                            |
| June 27, 2018      | Contractor working on Paxton Creek Interceptor project caused DWO at CSO 022   | 464                     | Paragraph 33.a<br>\$500                            |
| June 30, 2018      | Contractor working on Paxton Creek Interceptor project caused DWO at CSO 022   | 10,855                  | Paragraph 33.a<br>\$1,000                          |
| July 1, 2018       | Contractor working on Paxton Creek Interceptor project caused DWO at CSO 022   | 16,032                  | Paragraph 33.a<br>\$1,000                          |
| July 2, 2018       | Contractor working on Paxton Creek Interceptor project caused DWO at CSO 022   | 7,181                   | Paragraph 33.a<br>\$500                            |
| July 30, 2018      | Debris blockage - caused DWO at CSO 013  | Unknown                 | Paragraph 33.a<br>No penalty                       |
| August 24, 2018    | Water hydrant flushing that caused DWO at CSO 005  | Unknown                 | Paragraph 33.a<br>\$500                            |
| August 27, 2018    | Regs discharged into the collection system from Harrisburg Hospital caused DWO at CSO 057. This is a recurrent overflow caused by the hospital | Unknown                 | Paragraph 33.a<br>\$500                            |
| September 6, 2018  | Related to construction with Market Street rehab project caused DWO at CSO 034.  | Unknown                 | Paragraph 33.a<br>No penalty                       |
| September 24, 2018 | Related to construction with Market Street rehab project caused DWO at CSO 034.  | 800                     | Paragraph 33.a<br>No penalty                       |
| September 29, 2018 | Power failure at Front Street Pump State that caused a DWO at CSOs 002, 042, 043, 044, 045, 046, 048, 059                                      | Unknown                 | Paragraph 33.a<br>\$4,500                          |
| October 1, 2018    | Caused by City Island pump stations not running caused DWO at CSO 017 Front & Market.  | Unknown                 | Paragraph 33.a<br>No penalty                       |
| October 2, 2018    | Related to construction with Market Street rehab project caused DWO at CSO 034   | Unknown                 | Paragraph 33.a<br>No penalty                       |



| <b>Date</b>       | <b>Violation Description</b>  | <b>Overflow Volume Gallons</b> | <b>CD Requirement and Penalty Amount Paragraph 55. a.</b> |
|-------------------|---|--------------------------------|---|
| October 24, 2018  | Regs discharged into the collection system from Harrisburg Hospital caused DWO at CSO 057 | Unknown                        | Paragraph 33.a<br>\$500                                   |
| December 6, 2018  | Regs discharged into the collection system from Harrisburg Hospital caused DWO at CSO 057 | Unknown                        | Paragraph 33.a<br>\$500                                   |
| December 10, 2018 | Regs discharged into the collection system from Harrisburg Hospital caused DWO at CSO 057 | Unknown                        | Paragraph 33.a<br>\$500                                   |
| December 12, 2018 | Gate blocked by mat of grease and rags  | 74                             | Paragraph 33.a<br>No penalty                              |
| March 18, 2019    | Blockage on Cameron Street, exfiltrated to stormwater inlet.                              | >32                            | Paragraph 33.a<br>No penalty                              |
| August 6, 2019    | Mud, silt, brick accumulation   | 371                            | Paragraph 33.a<br>No penalty                              |

**Sanitary Sewer Overflows**

| <b>Date</b>       | <b>Violation Description</b>  | <b>Overflow Volume Gallons</b>                             | <b>CD Requirement and Penalty Amount Paragraph 55. a.</b> |
|-------------------|---|--|---|
| July 11, 2018     | Cameron and Industrial Road (next to Farm Show Complex). Penn Dot contractor hit unmarked sanitary sewer line       | Unknown  | Paragraph 27<br>No penalty                                |
| November 16, 2018 | Near Wilson Taylor Park caused by blockage, broken manhole  | >1,000   | Paragraph 27<br>\$500                                     |
| February 9, 2019  | 2318 Berryhill Street caused by grease blockage   | Unknown  | Paragraph 27<br>No penalty                                |
| February 11, 2019 | 2468 and 2472 Market Street caused a basement back-up caused by grease blockage                                     | Over a foot of sewage in basement of 2472 Berryhill Street | Paragraph 27<br>\$500                                     |
| March 19, 2019    | Dauphin and Wallace Streets caused by 2 clean-outs overflowed from surcharged sewage line with grease/rag blockage. | Unknown  | Paragraph 27<br>No Penalty                                |
| March 21, 2019    | 1607 Derry Street. During line replacement in 2018, lateral was never reconnected.                                  | Unknown  | Paragraph 27<br>No Penalty                                |

# Exhibit I



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
1650 Arch Street  
Philadelphia, Pennsylvania 19103-2029

MAR 05 2020

Mr. David Stewart, P.E., BCEE  
Director of Engineering  
Capital Region Water  
212 Locust Street, Suite 500  
Harrisburg, Pennsylvania 17101

RE: U.S. and PADEP v. Capital Region Water and City of Harrisburg  
Civil Action No. 1:15-cv-00291-WWC

Dear Mr. Stewart:

The U.S. Environmental Protection Agency ("EPA"), in consultation with the Pennsylvania Department of Environmental Protection ("PADEP"), reviewed the *Nine Minimum Control Plan V5.0*, dated August 2019 (NMCP) and prepared by Capital Region Water (CRW), Harrisburg, Pennsylvania. EPA's overall conclusion is that the majority of the NMCP complies with EPA's 1995 Guidance for Nine Minimum Controls. The enclosed comments identify the instances where the NMCP does not comply with that guidance. EPA notes that some elements of the NMCP are completed and others are in progress while some other elements are awaiting completion of CRW's Long Term Control Plan (LTCP).

The most significant shortfall that EPA observed in the NMCP is the lack of Solids and Floatable Controls on the combined sewer outfalls. Floatables/solids capture is not optional but required under the USEPA 1994 Combined Sewer Overflow Policy. CRW has not completed repairing and replacing all its catch basins nor does CRW currently have end-of-pipe solids/floatable removal devices installed on its outfalls. EPA is concerned that the materials collected by CRW following CSO events may be only a fraction of the total amount of materials discharged from the CSO outfalls during wet weather events. CRW cannot meet this NMC requirement until solids and floatable controls are installed on CSO outfalls.



If you have technical questions regarding this matter, please contact Mr. Steve Maslowski, Enforcement Officer at (215) 814-2371. If you have legal questions, please contact Ms. Pamela Lazos, Senior Assistant Regional Counsel, at (215) 814-2658.

Sincerely,

A handwritten signature in dark ink, appearing to read "Stacie Pratt", is written over a faint horizontal line.

Stacie Pratt, Chief  
NPDES Enforcement Section  
Enforcement and Compliance Assurance Division

Enclosure

cc: Nancy Flickinger, USDOJ  
Maria D. Bebenek, PADEP  
Victor Landis, PADEP  
Pamela Lazos, EPA ORC

## **Capitol Region Water Nine Minimum Controls Plan Comments**

The Environmental Protection Agency (EPA) has reviewed the Nine Minimum Controls Plan (NMC Plan) dated August 2019 prepared by Capital Region Water (CRW). This Plan appears to be in general conformance with USEPA's 1995 Combined Sewer Overflow (CSO) NMC Policy with some exceptions. Following are EPA's comments regarding the overall conformance of the CRW NMC Plan to CSO Policy requirements:

### **Minimum Control #1 – Review of Operation & Maintenance Program**

#### **Section 1.2.2.2 – Field Maintenance Equipment:**

- Based on the equipment that CRW already has, a sewer cleaning crew should be able to conduct routine cleaning of at least 1,000 feet of sewers smaller than 24-inches in diameter each work day. Utilizing its three Vactor trucks 200 days per year, CRW should be able to perform routine cleaning on over 100 miles of sewers smaller than 24-inches in diameter each year. Typically, specialized equipment is required to clean larger sewers which many agencies subcontract out. Section 1.6.3 suggests that CRW also intends to subcontract the cleaning of its larger sewers. Therefore, it appears that CRW has enough equipment to clean all of its smaller sewers annually and still have additional capability using its jetter truck for cleaning “hot spot” blockage locations as needed.
- Based on the equipment that CRW owns, a sewer televising crew should be able to televise 1,000 to 1,500 feet per day of sewers smaller than 24-inches in diameter. Utilizing its single CCTV truck 100 days per year for routine sewer condition assessment, CRW should be able to perform 20 to 30 miles of CCTV per year. Typically, specialized equipment is required to televise larger sewers which many agencies subcontract. Section 1.6.3 suggests that CRW also intends to subcontract the inspection of its larger sewers. Therefore, it appears that CRW has enough equipment to televise its smaller sewers within four to five years and still have adequate resources for televising sewers in emergency situations.
- EPA requests that CRW document that there will be an adequate amount of personal protective equipment for the number of sewer cleaning, CCTV, CSO outfall inspection, and sewer maintenance crews that will be out in the field.

#### **Section 1.2.3 – Remedial Work Prioritization:**

- EPA concurs with the risk management and remediation prioritization protocols presented in Figures 1-3 and 1-4 respectively.

#### **Section 1.4.1 – O&M of CSO Regulator Structures - Inspection Procedures/Schedules:**

- The third paragraph on page 1-24, presents time frames required to complete the daily inspections of the CSI structures under different operational and site conditions. EPA request that CRW needs to confirm they have appropriate number of field inspection crews employed to perform these daily inspections and the inspection procedures referenced in CRW's Operation & Maintenance Manual (OMM) Sections 4.1.3 through 4.1.6. Past conversations with CRW suggest that CRW expects a

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single inspection crew to complete these daily inspections. Further, it appears that there are opportunities to automate all or part of this daily inspection process to both reduce labor cost and enhance responsiveness to environmental issues. EPA recommends that CRW consider the installation of remote-reading flow level sensors, such as “Smart Covers®” to continuously monitor flow regulator performance, particularly at larger CSO regulators and CSO outfall locations where there is potential for river/creek intrusion into the interceptor sewer system.

**Section 1.5.1 – O&M of Outfalls/Backflow Prevention Gates - Inspection Procedures/Schedules:**

- The third paragraph on page 1-27 discusses the potential for river/creek intrusion into the interceptor sewer system. EPA requests that CRW provide information on:
  - The locations where intrusions have occurred,
  - The three outfalls along Paxton Creek where diversion weir elevation is comparable to high water conditions,
  - The number of intrusions that have occurred at each of these locations over the past five years,
  - The circumstances causing each intrusion (i.e. stream level) at each location; and,
  - The mitigation measures CRW has taken or plans to undertake to prevent future intrusions, including the installation of automated real-time intrusion monitoring sensors.

**Section 1.6.1 – O&M of Interceptors - Inspection Procedures/Schedules:**

- The second paragraph of Section 1.6.3 indicates that CRW plans to clean and inspect its interceptors on a five-year cycle. This appears to be adequate to maintain the interceptors at their peak hydraulic performance. EPA requests that CRW also perform annual monitoring to identify locations in the interceptors where debris build-ups occur more rapidly and remove the debris from any locations when the build-up exceeds 15 percent of the height of the interceptor at those locations.

**Section 1.7.1 – O&M of Pump Stations - Inspection Procedures/Schedules:**

- The NMC Plan states that the Front Street and Spring Street Pump Stations are inspected four times per day in dry weather and six times per day in wet weather. EPA requests that CRW list all its pump stations even if they are located in the separate collection system. The NMC Plan further states that maintenance documentation requirements are presented in CRW OMM Section 4.3.9 and maintenance documentation forms and checklists are presented in NMC Plan Appendix A. EPA requests that CRW confirm the number of field inspection crews employed to perform these daily inspections.

**Section 1.8.1 – O&M of Force Mains - Inspection Procedures/Schedules:**

- The NMC Plan indicates that the Front Street and Spring Street Force Mains are walked “periodically” to look for leaks; however, “periodically” is not defined in the NMC Plan. The NMC Plan states that force main inspection forms are presented in Plan Appendix A. This information was not included in

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the CRW NMC Plan and the O&M Manual that EPA was provided for review. EPA requests that CRW provide the meaning of “periodically.” EPA requests that the Force Mains are walked at least once a year.

**Section 1.9.1 – O&M of Collection System Sewers - Inspection Procedures/Schedules:**

- The NMC Plan states that the “hot spot” cleaning locations are listed in Appendix A3.3. However, this information was not included in the CRW NMC Plan document that EPA was provided for review. EPA requests that CRW provides the “hot spot” list.
- In the third paragraph on page 1-35, CRW proposes to complete cleaning and CCTV of its entire collection system by the end of 2024. This schedule appears reasonable and will allow CRW to maximize the use of its own cleaning and CCTV equipment.

**Section 1.9.3 – O&M of Collection System Sewers – Documentation of Current Control Practices:**

- The NMC Plan states that collection system maintenance activity documentation forms are presented in Plan Appendix A. However, this information was not included in the CRW NMC Plan document that EPA was provided for review. EPA requests a copy of the collection system maintenance activity documentation forms.

**Section 1.10.1 – O&M of Inlets/Catch Basins – Inspection Procedures/Schedules:**

- CRW did not provide several documents for inlet/catch-basin cleaning and inspection procedures. This included “Inlet and Catch Basin Activities Checklist” presented in CRW OMM Section 4.7.4, and “Field Maintenance Information summary tables” discussed in Appendix A. EPA requests the checklist and summary tables.
- The first paragraph on page 1-37 states that: “CRW plans to complete all of the *inlet* cleaning and repair by the end of 2021.” EPA concurs with this schedule, but *catch basins* are not discussed. EPA requests that CRW needs to confirm that catch basin cleaning and repair are also included.

**Minimum Control #2: Maximum Use of the Collection System for Storage:**

**Section 2.2 – Combined Sewer Inspection:**

- The CRW NMC Plan states that approximately 45,000-feet (7 percent) of its collection system is comprised of interceptor sewers 2-feet in diameter to 5-feet by 6-feet. The Plan further states that these interceptors have been cleaned and inspected in accordance with the requirements of the partial CD. The inspection revealed that approximately 34,000-feet of interceptors are in critical need of repair within the next five years. The CRW NMC Plan does not present a schedule for completing these repairs. EPA requests the revised NMC Plan have a copy of the schedule for completing these repairs. The CRW NMC Plan states that CRW will conduct future interceptor inspections on a five-

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year cycle. Based on the information provided, this reinspection schedule appears to be adequate to monitor debris build-up and ongoing deterioration in those interceptors not repaired.

- The CRW NMC Plan cites CRW's daily CSO regulator and outfall inspection program as part of its effort to maximize the use of its collection system. Based on the information provided, the inspection program appears to be adequate to maintain the function of flow regulators provided that this program is properly staffed.

**Section 2.4 – Adjustment of Regulator Settings:**

- In the second full paragraph on page 2-6, the CRW NMC Plan states that adjustments of regulators have not yet been performed but are part of CRW's future collection system improvement program. EPA requests that CRW provide a schedule for performing the regulator adjustments, if not already included in the LTCP.

**Section 2.5 – Installation of In-System Controls:**

- In the first full paragraph on page 2-7, the CRW NMC Plan states that in-system flow controls have not yet been installed but are under consideration. EPA requests that CRW provide a location plan and completion schedule for installation of in-system controls.

**Minimum Control #3 – Review & Modification of Industrial Pretreatment Programs:**

- Based upon the information presented, it appears that the CRW NMC Plan is currently in conformance with USEPA's CSO Policy. The third full paragraph on page 3-9 states that CRW will annually review its industrial user inventory and make changes necessary to include new users and remove users no longer discharging to the CRW collection system. New non-domestic users will be required to submit an "Industrial Wastewater Discharge Application" for evaluation and appropriate action by CRW.

**Minimum Control #4 – Maximize Flows to the POTWs:**

- As noted under EPA's review of NMC #2, CRW has performed cleaning of its interceptor sewers to maximize their flow-carrying capacity, but CRW has not yet developed or implemented regulator modifications or in-system controls to maximize storage in CRW's collection system. Also as stated in the second paragraph of Section 4.2.3 on page 4-4, CRW has not yet identified or implemented infiltration and inflow reduction measures to reduce flows in its collection system. Finally, as stated in the second paragraph of Section 4.3.2 on page 4-5, CRW has not yet addressed increasing the wet-weather capacity of its wastewater treatment plant. Therefore, CRW is not currently in compliance with NMC #4. CRW may come into compliance upon implementation of the LTCP improvements.



Capital Region Water

Review – August 2019 Nine Minimum Control Plan

**Minimum Control #5 – Prohibiting CSO Discharges During Dry Weather:**

- CRW's program of daily inspections of CSO regulator structures and outfalls are expected to be effective in achieving compliance with NMC #5 if that inspection effort is properly staffed.

**Minimum Control #6 – Control of Solid and Floatable Material in CSO Discharges:**

- As stated in Section 6.3.3: "CRW does not currently have end-of-pipe solids/floatables removal devices on their outfalls." Therefore, CRW is not in compliance with NMC #6. The second paragraph of Section 6.3.3 on page 6-4 states that: "During the implementation of CRW's Long Term Control Plan (LTCP), end-of-pipe controls such as nets and outfall booms will be incorporated in specific projects where they are determined to be feasible." This statement raises concern that CRW may not fully comply with NMC #6, even after LTCP improvements are completed. CRW is required to have solid and floatable controls on all CSO outfalls.

**Minimum Control #7 – Pollution Prevention Programs:**

- Based upon the information presented in the CRW NMC Plan, it appears that CRW is in compliance with the requirements of NMC #7.

**Minimum Control #8 – Public Notification:**

- Upon installation of the new CSO outfall signage presented in the CRW NMC Plan, it appears that CRW will be in compliance with the requirements of NMC #8. Once the new CSO signs are installed, EPA requests that CRW notify EPA to confirm installation.

**Minimum Control #9 – Inspection, Monitoring, and Reporting:**

- Based upon the information presented in the CRW NMC Plan, it appears that CRW is in general compliance with the requirements of NMC #9.

# Exhibit J



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
1650 Arch Street  
Philadelphia, Pennsylvania 19103-2029

April 27, 2020

**Electronic Mail**

Charlotte Katzenmoyer  
Chief Executive Officer  
Capital Region Water  
212 Locust Street, Suite 500  
Harrisburg, Pennsylvania 17101

RE: U. S and PADEP v. Capital Region Water and City of Harrisburg  
Civil Action No. 1:15-cv-00291-WWC

Dear Ms. Katzenmoyer:

On behalf of the Environmental Protection Agency (EPA) and the Pennsylvania Department of Environmental Protection (PADEP), we write in connection with the August 24, 2015 Partial Consent Decree (PCD), specifically Section V. E., Paragraph 14, that requires Capital Region Water (CRW) to submit for review and approval a revised and updated Long-Term Control Plan (LTCP) conforming to the requirements of EPA's 1994 Combined Sewer Overflow Control Policy (CSO Policy) and EPA's September 1995 Guidance for Long-Term Control Plan.

EPA has previewed CRW's City Beautiful H2O Program Plan LTCP dated March 29, 2018 and provided written comments on July 6, 2018 and July 18, 2019. PADEP also provided comments. We met with CRW in person on April 18, 2018, August 7, 2018, September 10, 2019, October 17, 2019, December 3, 2019, January 15, 2020, and February 26, 2020 regarding the LTCP, and had conference calls on February 13, 2018, November 18, 2019, and March 19, 2020 with CRW to flesh out the LTCP requirements and assist in developing a strategy to move this matter forward. After two years of very little progress, the LTCP still does not meet the requirements specified in the PCD, and despite the lengthy discussions and analyses undertaken by the parties, CRW still seems to be struggling with the concept of the LTCP plan.

As stated above, on July 6, 2018, EPA sent CRW its first set of comments on the LTCP. In accordance with the PCD, Paragraph 37.d., CRW had forty-five days to correct deficiencies in response to those comments and resubmit its report. Under Paragraph 37.f. ii. of the PCD, EPA and PADEP may seek stipulated penalties for CRW's failure to meet CD milestones, one of which is submission of an approvable LTCP. Despite the myriad discussions between the parties over the past two years, and the delivery of our last set of comments during our March 19, 2020 technical call, CRW continues to provide cost estimates for small scale remediation projects with contingency costs built in and then adding contingency costs to a project's cost estimate for a second time, thereby inflating the overall cost estimate of each project and CRW's ability to pay. In addition, CRW has failed to provide actual CSO projects that will reduce volume and frequency of overflows.



As required under the 1994 CSO Policy and Section 402(q) of the Clean Water Act, the LTCP must include selected CSO controls designed to meet the overarching goals of bringing all CSO discharge points into full compliance with the technology-based and water quality-based requirements of the CWA, and to minimize the impacts of CSOs on water quality, aquatic biota and human health. The LTCP should include review of all available CSO control technologies and CRW must identify and adequately evaluate an appropriately broad range of technically feasible CSO controls, regardless of the cost of each, so a reasonable determination can be made, and the best technologies chosen. Excluding certain technologies because of cost misapplies the CSO policy.

In 2019, CRW discharged more than 900 million gallons of combined sewage to the waters of the United States, impacting human health and the environment. Given the time lapse, the continuing violations of the CWA, and CRW's claim that it is still gathering data to support elements of the LTCP, EPA and PADEP request that CRW develop a list of short-term CSO control projects that will reduce a significant amount of the volume and frequency of CSOs occurring in the CRW system to further the goal of the CD which is to bring CRW's system into compliance during the data gathering process.

To that end, we are requesting that CRW prepare of list of projects that it will undertake as interim/short term measures that can be completed within next six to twelve months of the date of this letter. CRW will undertake these projects pursuant to one or a series of administrative orders on consent that will eventually be memorialized in the next iteration of a consent decree, meaning, whatever succeeds the current PCD. Completion of these short-term projects will result in more immediate pollution reduction impacts to waters of the U.S. and the Commonwealth, including those in the Chesapeake Bay Watershed.

In addition, EPA requests that CRW develop a reasonable schedule to complete and submit an approvable LTCP that conforms with the CSO Policy and EPA's guidance on LTCPs. If these two conditions are met, EPA and PADEP will consider waiving stipulated penalties for the period of July 6, 2018 to present for CRW's failure to complete and submit an approvable LTCP. However, should you not wish to pursue this course of action, the agencies may pursue available enforcement action(s).

We request that you respond, via email to Maslowski.Steven@epa.gov and Lazos.Pamela@epa.gov, with your intent to comply with this proposal **within 30 days of the date of this letter**. In the interim, should you have technical questions regarding this matter, please contact Mr. Steve Maslowski, Enforcement Officer at (215) 814-2371. If you have legal questions, please contact Ms. Pamela Lazos, Senior Assistant Regional Counsel, at (215) 814-2658.

Sincerely,

*Stacie Pratt*

Stacie Pratt, Chief  
NPDES Section  
Enforcement and Compliance Assurance Division

cc: Fred Andes, Esq.  
Maria D. Bebenek, PADEP  
Pamela Lazos, EPA ORC  
Sushila Nanda, EPA OECA

# Exhibit K



November 9, 2018

Chief, Environmental Enforcement Section  
Environment and Natural Resources Division  
U.S. Department of Justice  
601 D Street NW  
Washington, D.C. 20004  
Re: DOJ No. 90-5-1-1-10157

Deane H. Bartlett  
Senior Assistant Regional Counsel  
Office of Regional Counsel (3RC20)  
U.S. Environmental Protection Agency, Region 3  
1650 Arch St.  
Philadelphia, PA 19103-2029

Chief  
NPDES Enforcement Branch (3WP42)  
Water Protection Division  
U.S. Environmental Protection Agency, Region 3  
1650 Arch St.  
Philadelphia, PA 19103-2029

Program Manager – Clean Water Program  
Department of Environmental Protection  
South Central Regional Office  
909 Elmerton Avenue  
Harrisburg, PA 17110-8200

RE: Civil Action No. 1:15-cv-00291-WWC: City Beautiful H<sub>2</sub>O Program Plan – Response to EPA Comments

To Plaintiffs, Civil Action No. 1:15-cv-00291-WWC:

Capital Region Water (CRW) submitted its City Beautiful H<sub>2</sub>O Program Plan (CBH2OPP) to EPA/DEP on April 1, 2018, the required submittal date under the partial Consent Decree. CRW received a letter from the EPA dated July 6, 2018 requesting responses to review comments. This letter provides clarifications to EPA's overall assessment of the CBH2OPP presented in EPA's cover letter, as well as a point by point response to each comment in the attachment to the letter. We request a meeting at your earliest convenience to review these responses, provide additional clarification, and discuss next steps.

**Response to EPA Cover Letter Comments:**

CRW provides the following clarifications to several interpretations of the CBH2OPP expressed in EPA's cover letter.

**Cover Letter Comment 1:**

*The Environmental Protection Agency (EPA) received the Capital Region Water's (CRW) City Beautiful H<sub>2</sub>O Program Plan Long Term Control Plan (LTCP or Plan), dated March 29, 2018. The Partial Consent Decree (PCD) at Section V. E., Paragraph 14 requires CRW to submit for review and approval*



*a revised and updated LTCP that conforms to the requirements of EPA's 1994 CSO Control Policy (CSO Policy) and Guidance for Long Term Control Plan, as well as additional guidance on green infrastructure and integrated planning.*

### Cover Letter Response 1:

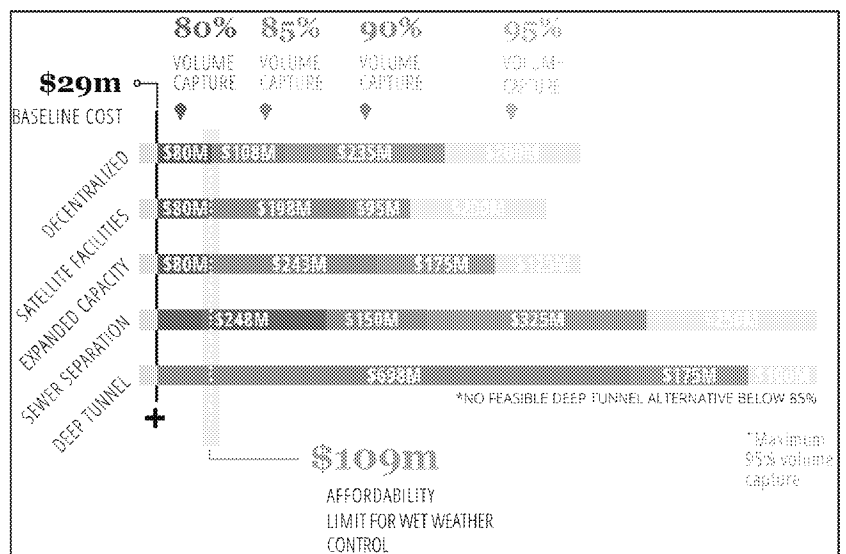
EPA mistitled CRW's submittal, calling it the "City Beautiful H<sub>2</sub>O Program Plan Long Term Control Plan (LTCP or Plan)". This misrepresents the intent of the submittal, which is an Integrated Municipal Stormwater and Wastewater Plan prepared according to EPA's framework dated June 5, 2012. It includes CRW's CSO LTCP, but transcends a stand-alone LTCP by also addressing sanitary sewer overflows (SSOs), municipal separate storm sewer system (MS4) discharges, total maximum daily load (TMDL) reductions, and other sources of water quality impairment within the Harrisburg metropolitan area. As is appropriate for such a plan, it establishes priorities for improving water quality that transcend CSO-centric control objectives, particularly as they relate to sediment and nutrient TMDLs for Paxton Creek and the Chesapeake Bay.

### Cover Letter Comment 2:

*EPA has reviewed the LTCP and concludes that it does not comply with the requirements specified in the PCD, and therefore the submission is disapproved. In fact, Section 11.5 of the LTCP specifically acknowledges that the proposed LTCP will not result in compliance with the CSO Policy and the Clean Water Act (CWA), noting that "CRW does not expect to achieve compliance with water quality objectives for designated uses." As such, in accordance with Section X of the PCD, CRW has failed to comply with the PCD and is potentially subject to stipulated penalties for such failure.*

### Cover Letter Response 2:

This quote from Section 11.5, "CRW does not expect to achieve compliance with water quality objectives for designated uses" is out of context. CRW does expect that ultimately its efforts will achieve compliance with water quality objectives for designated uses, but not within the 20-year immediate- and near-term implementation phases defined in detail in the Plan. Future phases beyond year 20, as shown in the embedded graphic from the CBH2OPP Companion Document, were not described in detail but can be derived for various control levels from information in the Plan. Attached Table 5 provides the levels of control and the associated costs to achieve a range of overflow captures and frequencies during the typical year under the





recommended alternative, a decentralized green-grey stormwater control strategy. These ranges would likely result in water quality compliance. Our responses to Comments 13 and 22 offer clarifying information of CRW's anticipated mid-term and long-term actions to ultimately meet water quality objectives for designated uses.

**Cover Letter Comment 3:**

*CRW's failure to comply with the terms of the PCD are demonstrated primarily by: 1) CRW has selected the Presumption Approach for achievement of water quality standards (WQS), using the 85 percent capture criterion, yet, on its face, the selected alternative would not meet WQS and would only achieve 80 percent capture after the 20-year completion of the LTCP;*

**Cover Letter Response 3:**

The EPA statement that, "*CRW has selected the Presumption Approach...*" is not correct. CRW is committed to meeting water quality objectives for designated uses but needs to work closely with EPA and DEP through an adaptive management approach to better define compliance endpoints as the Plan is implemented. Our responses to Comments 13 and 26c offer additional details on CRW's adaptive management and compliance monitoring approaches to support this. The compliance endpoint will need to take into account the high-frequency, low-duration nature of CSO discharges from the CRW system.

**Cover Letter Comment 4:**

*2) CRW has considered a limited number of CSO control alternatives, failing to even identify the specific projects proposed to be completed, along with associated costs;*

**Cover Letter Response 4:**

CRW disagrees with this assessment. A broad range of technologies are evaluated and screened in Section 6 to identify those most feasible for two systemwide and three local control strategies. Section 8 evaluated each control strategy based upon "knee of the curve" cost-performance and triple bottom line benefits, with a decentralized green-grey stormwater control strategy recommended. Our response to Comment 32a, supported by Attachment Tables 1 through 4, offers a broader description of the alternatives evaluated and additional details on the specific projects recommended for implementation during the immediate implementation phase (first 10 years).

**Cover Letter Comment 5:**

*and 3) CRW has failed to complete a Financial Capability Assessment (FCA) that complies with the PCD (Paragraph 18) as noted previously in EPA's September 9, 2016 letter to CRW (see attached).*

**Cover Letter Response 5:**

CRW disagrees with this assessment. We believe the EPA position to be an expansion in the scope of the FCA requirements beyond the "Harrisburg Sewer System" as specified in paragraph 18 of the





PCD. Therefore, we believe we have satisfied the requirement to provide the Plaintiffs with a full and complete FCA. Our responses to Comment 21 offer clarifying information on preparation of the FCA.

Per the teleconference with CRW and EPA held on November 1, 2018, CRW will continue to coordinate with EPA staff and consultants to revise the Residential Indicator calculation of the FCA to reflect the satellite community incomes and system costs and to reflect total projected cost of compliance, rather than the amount that results in CRW meeting the high burden threshold.

**Cover Letter Comment 6:**

*Both the Pennsylvania Department of Environmental Protection (PADEP) and EPA are fully aware of the extensive deferred maintenance of the Harrisburg wastewater system and understand the need to address this as part of the remediation of the system. CRW's proposed measures would focus on this remediation in the first 10 years, to achieve 79 percent capture by year 10 (from the current 53 percent capture level). Arguably, these are proposed measures that are covered under the Nine Minimum Controls (e.g., regulator upgrades).*

**Cover Letter Response 6:**

CRW disagrees with the EPA assessment that, "Arguably, these are proposed [system rehabilitation] measures that are covered under the Nine Minimum Controls...." According to EPA's May 31, 1995 cover memorandum for its "Guidance for Nine Minimum Controls", the Nine Minimum Controls are, "... minimum technology-based controls that can be used to address CSO problems without extensive engineering studies or significant construction costs". CRW has identified over \$100M of system improvement costs over the next ten years that achieve the dual objectives of extending useful life AND reducing CSOs (i.e., increasing capture from 53% to 79%). Attached Tables 1 through 3 provide additional documentation with this response to demonstrate that the extent, engineering requirements, and cost of these improvements far exceed expectations under the NMCs.

**Cover Letter Comment 7:**

*Measures proposed to occur between years 10 and 20 would result in only a one percent additional increase in CSO capture. This is unacceptable. CRW is proposing a Plan that focuses on system rehabilitation with only a limited amount of CSO control measures. Under the proposed LTCP, several CSOs appear likely to remain active 30 to 50 or even more times per typical year, which cannot possibly result in the achievement of WQS.*

**Cover Letter Response 7:**

The Statement, "CRW is proposing a Plan that focuses on system rehabilitation with only a limited amount of CSO control measures..." misrepresents CRW's approach, which prioritizes projects that can jointly achieve system rehabilitation AND wet weather control needs. Our response to Comment 10 provides additional detail. The focus of the immediate implementation phase is to recover the functionality and enhance the capacity of CRW's interceptors, regulators, and pumping



stations to deliver as much flow to the advanced wastewater treatment facility (AWTF) as practical. Attachment Tables 1 through 4 provide additional details on the specific projects proposed for the immediate implementation phase. The findings of detailed CCTV collection system inspections and hydraulic evaluations are required to define specific projects for future implementation phases.

**Cover Letter Comment 8:**

*The selected CSO controls set forth in the LTCP must be designed to meet the overarching goals of bringing all CSO discharge points into full compliance with the technology-based and water quality-based requirements of the CWA and minimizing the impacts of CSOs on water quality, aquatic biota and human health.*

**Cover Letter Response 8:**

It is understood that the ultimate goal of all CSO LTCPs is to meet water quality objectives for designated uses. Attached Tables 1 through 4 provide additional detail on projects to be implemented during the next 20-years, and responses to comments #13 and #26c describe how the adaptive management process will be applied to define needed investments to achieve additional levels of control. CRW is prepared to work with EPA and DEP to define a compliance timeline of specific structural and non-structural future milestones, including specific decision points where progress will be assessed, and future directions determined. The adaptive management process, with formal reports submitted every 5 years, will document how significant new information (i.e. CCTV inspection results), new opportunities (i.e. decentralized CSO controls linked to needed City collection system rehabilitation), and/or unexpected implementation complications (i.e. Paxton Creek interceptor rehabilitation) will be used to shape and refine the evolving implementation of the Plan.

**Cover Letter Comment 9:**

*Available CSO control technologies are not intended to be limited by cost. CRW must identify and adequately evaluate an appropriately broad range of technically feasible CSO controls regardless of the cost of each. The FCA serves to help establish an appropriate CSO control implementation schedule.*

**Cover Letter Response 9:**

We believe the Plan is clear that alternative control technologies were NOT screened out based on cost alone. Our narrative and tabular responses to Comment 22 provide additional information and details. The Plan was prepared in compliance with EPA guidance, and alternative control technologies were evaluated and screened (in Section 6 of the Plan) on the basis of technical feasibility and site constraints. Alternative control technologies that were found to be technically feasible and conformed to site constraints were carried forward to the Alternatives Analysis in Plan Section 8. The decentralized green-grey stormwater control strategy was recommended through a cost-performance and triple bottom line alternative evaluation process that considered site-specific constraints, benefits, and costs. It was not until implementation phases were defined in Section 11



that the immediate- and near-term cost limitations defined by the FCA were used to identify specific projects for implementation. Detailed commitments to specific projects focused on an initial 20-year implementation period due to significant uncertainties in collection system renewal needs, which in turn could be linked to specific projects to also achieve wet weather control.

**Comment 1:**

*Executive Summary highlights the City of Harrisburg's (City) financial challenges (see pages ES-1 and 2). While the City is acknowledged to have significant financial challenges, recent metrics such as unemployment and median household income (MHI) have displayed encouraging trends over the last year or two.*

**Response 1:**

Acknowledged.

**Comment 2:**

*Section 1.2.1 presents an example of Capital Region Water's (CRW) existing combined sewer overflows (CSO) warning signs. The sign does not appear to clearly indicate that the discharge contains untreated sewage or poses a health risk, as it should. The font in the example needs to be changed to be easily read from a reasonable distance.*

**Response 2:**

Capital Region Water's CSO warning signs are 36" x 36", more than the minimum size listed in the partial consent decree (24"x18") and are easily read from a reasonable distance. Signs installed in the future will include language indicating that the discharge contains untreated sewage containing harmful bacteria. See Attachment Figure 1 for a full-page example of the 36"x 36" sign.



RE: Civil Action No. 1:15-cv-00291-WWC:  
 City Beautiful H<sub>2</sub>O Program Plan  
 Response to EPA Comments  
 November 9, 2018  
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**Comment 3:**

*Section 1.3.1 describes CRW's service area. This section notes that CRW has the following suburban communities as wholesale customers:*

- Lower Paxton Township
- Paxtang Borough
- Penbrook Borough
- Steelton Borough
- Susquehanna Borough
- Swartara Borough [sic]

*Together, these communities have a total population of approximately 106,000, as compared to the City of Harrisburg's population of approximately 49,000. CRW does not provide service to 100% of each of the above communities; however, it appears that CRW provides wastewater treatment for at least 70,000 persons in those wholesale communities.*

**Response 3:**

Acknowledged.

**Comment 4:**

*Section 1.4.5 discusses hydraulic capacity problems in the Spring Creek Interceptor. The Plan notes that sanitary sewer overflows (SSOs) may occur from this interceptor, that "over 90 percent of the flow in the Spring Creek interceptor is generated by the suburban communities," and furthermore that a "regional/intermunicipal solution is needed for the Program Plan." CRW provides no indication that it is actively pursuing such a regional solution to wet weather flows. As discussed elsewhere, CRW has instead assumed that CSO control is solely the City of Harrisburg's responsibility. The Partial Consent Decree (PCD) requires CRW to consider system-wide controls and EPA's Financial Capability Assessment (FCA) Guidance requires CRW to consider its entire service area, even if it encompasses multiple jurisdictions. Describe CRW's efforts working with the suburban communities to develop a regional wet weather flow plan.*

**Response 4:**

For the Spring Creek Interceptor hydraulic capacity problems, CRW provided the five suburban wholesale customers that send flows through Spring Creek interceptor with a September 13, 2017 technical memo detailing our hydraulic evaluation of the interceptor. We subsequently convened a meeting on January 26, 2018 to discuss the hydraulic capacity limitations of the line. The meeting was attended by representatives of Susquehanna, Lower Paxton and Swatara Townships. CRW will continue to collaborate with the suburban communities.

While the final portion of the interceptor lies within the City of Harrisburg, the majority of the contributory drainage basin (10.5 of 11.4 acres) lie outside the City, and the interceptor primarily serves the five suburban municipalities (Penbrook and Paxtang Boroughs, Susquehanna, Lower



Paxton and Swatara Townships). Therefore, CRW believes that the leadership on this project should lie with the suburban municipalities.

**Comment 5:**

*Section 1.8.2 presents an overview of the systemwide control strategies considered by CRW. The description of Systemwide Strategy 2 highlights the construction of a deep tunnel. Many controls evaluated by CRW, including this one, use what appears to be an unnecessarily large "minimum feasible size." In this case, CRW determines that a 14 million-gallon (MG) tunnel represents the smallest feasible control level. Such a determination has the effect of ensuring that a control strategy is technically or physically "infeasible," given CRW's determined level of affordability. CRW should reevaluate use of this potential control.*

**Response 5:**

CRW believes that a rigorous evaluation of deep tunneling options was conducted. While the deep tunnel alternative is considered a feasible alternative (per Section 6 of the CBH2OPP), the cost-performance and triple-bottom line evaluation of alternatives presented in Section 8 of the CBH2OPP determined that the deep tunnel alternative is the least cost-effective of the five alternative control strategies under consideration by CRW. The deep tunnel size reductions suggested by EPA would further diminish the cost-effectiveness of this alternative.

- Paragraph 22.a of the PCD requires the consideration of "deep tunnel storage" as part of the alternatives evaluation as a feasible technology. The combined sewage overflow reduction effectiveness of deep tunnel storage compared to other technologies rely on the ability to collect and direct combined sewage flows from large portions of the combined sewer system. The deep tunnel control strategy presented is intended to illustrate systemwide control for most or all of the CSO outfalls. In order to direct most or all CSO locations to a deep tunnel would require a deep tunnel system roughly the length of the Front Street interceptor plus the length of the Paxton Creek interceptor (up to 52,000 feet).
- The minimum diameter of 10 feet is established by commercially-available deep tunnel boring machines and an assessment of deep tunnel systems for combined sewage systems cited in the Philadelphia Water Departments Alternative Costing Tool documentation.
- Deep tunnel storage systems require various shafts to allow for flow conveyance, access, ventilation, and continued operation and maintenance, with a 10 foot minimum diameter providing reasonable functionality for these considerations as well as structural integrity due to the uncertainty of underground materials and conditions.
- This minimum diameter in combination with the minimum length selected and considerations for pipe slope and ventilation yields the minimum cited effective storage volume of 14 MG.
- Deep tunnel projects involve a high mobilization cost for the boring machine and relatively high fixed costs for drop shafts and dewatering pump stations. A shorter length or smaller



diameter tunnel would yield less CSO reduction performance without significant reductions in cost.

- Smaller diameter pipes can be considered for gravity-drained near-surface tunnel construction methods and were considered for parts of the Systemwide Strategy 1 and Local Strategy 2 to facilitate conveyance of combined sewage. The deep tunnel storage alternative strived to achieve higher levels of systemwide CSO reduction by using a larger tunnel. The resulting alternative cost indicates the 10 feet diameter system is less cost-effective than other alternatives evaluated at a similar control level.
- High mobilization and fixed costs associated with deep tunnels also diminish the cost-effectiveness of “hybrid” strategies suggested by EPA. Instead, hybrid solutions such as satellite storage with conveyance/consolidation sewers are not considered “deep tunnels” but could be implemented with near-surface tunneling technologies that would allow gravity drainage.
- In addition, systemwide strategies do not address critical collection system capacity constraints that may cause unauthorized releases (e.g., surface/basement flooding, per EPA comment No. 14), a primary rationale for recommending a decentralized green-grey stormwater control strategy able to provide control of both CSOs and unauthorized releases.

**Comment 6:**

*Table 1-3 summarizes the limited amount of green infrastructure (GI) that CRW proposes to implement within the proposed 20-year Plan. Note that the City-wide Cumulative GI Implementation target of 3% of the impervious area is only 66 acres,*

**Response 6:**

The comment only acknowledges GI projects for the first 10 years and overlooks anticipated GI projects for implementation years 11 through 20. Table 1-3 of the CBH2OPP summarizes the Preferred Control Strategy – Decentralized Controls (Green/Grey), breaking out two implementation periods over the 20-year plan in the right columns, Immediate (years 1-10) and Near-Term (years 11-20). The Immediate (years 1-10) City-wide Cumulative GI Implementation target is 3% of the impervious area and the Near-Term (years 11-20) City-wide Cumulative GI Implementation target is 5% of the impervious area for a total of 8%. This is approximately 177 acres of impervious area targeted for GSI implementation. Additional GI implementation is also expected through redevelopment projects and/or roadway reconstruction projects expected over the 20-year implementation period. These projects were not included because they do not require CRW funding, nor is an estimate of potential impervious area control possible at this time. CRW believes that controls of at least 8 percent of the impervious area over this initial 20-year time frame is equivalent to other similar programs and forms a firm foundation for achieving additional control beyond year 20.



#### **Comment 7:**

*Section 1.9.2 discusses CRW's proposed adaptive management process. CRW is proposing "decision points" at 10 years, 15 years, and perhaps 20 years at which Plan adjustments may be made. The degree to which CRW anticipates EPA and PADEP reviewing and approving such adjustments needs to be addressed. Since CRW's current Plan is inadequate, EPA recommends that the Adaptive Management Plan be submitted every five years.*

#### **Response 7:**

Under its adaptive management approach, CRW proposes a comprehensive review of the program status at years 10 and 15, with supporting documentation and reporting to EPA/DEP via *Adaptive Management Plan Update Reports*. As requested by EPA, CRW will add a status review and report submission at year 5, at year 20, and every subsequent five years during the mid-term and long-term implementation periods. The *Adaptive Management Plan Update Reports* would contain:

- A summary of significant projects or project elements that have been completed with the associated costs and implementation dates.
- A summary of new information, new opportunities, unexpected implementation complications, etc. that prompts a request and subsequent discussion with EPA/DEP to revise the scope, schedule, or budget of specific Plan elements.
- An updated list of the specific projects that will be implemented in the next 5-year implementation period along with their associated implementation schedules.

Updates on the adaptation and implementation of the Plan will also be provided through CRW's existing annual progress reporting process. The following topics would be addressed within the annual reports:

- As significant new information (i.e. CCTV inspection results), new opportunities (i.e. a developer proposes a new project), and/or unexpected implementation complications (i.e. Paxton Creek Interceptor rehabilitation) are encountered and assessed, CRW will proactively notify EPA/DEP and discuss how the new situation will impact the scope, schedule of the project for EPA/DEP comment and approval.
- Request EPA/DEP to provide a review of receiving water quality trends and emerging issues, including ongoing/proposed water quality monitoring/assessment programs that could be integrated with CRW's compliance monitoring requirements.
- If scope/schedule/budget revisions for an individual project would have a significant impact on implementing the remaining portions of the Plan, proposed adaptations and revisions to the Plan would be discussed with EPA/DEP for comment and approval.

The combination of the annual reporting and the comprehensive five-year reporting will address all the coordination needs for the ongoing implementation CRW Plan through the adaptive



management process. EPA's and DEP's role in both categories of reporting would be the review, discussion, and approval of needed adaptations or revisions to Plan budgets, schedules, and priorities in response to new information, new opportunities, and new situations.

**Comment 8:**

*Public Participation: Section 1.2.1 describes CRW's public involvement efforts in support of release of the plan, specifically three public meetings with a total of only 29 attendees at the three meetings. Section 2 describes CRW's public engagement/participation efforts in more detail. It is noted that CRW did convene a stakeholder committee; however, it appears that only a limited number of meetings took place beginning in mid-2017, which is far too late in the LTCP development process. EPA suggests CRW engage the public again before submitting its revised LTCP.*

**Response 8:**

The existing narrative within Section 2.2.2 of the Plan demonstrates that community engagement was an essential component throughout the three-plus year development period of Capital Region Water's City Beautiful H<sub>2</sub>O Program Plan (CBH2OPP). Community engagement began in support of CRW's Community Greening Plan (as cited), an integral element of the overall planning process required under the PCD. Two large public engagement phases, one in the winter of 2016 and one in the summer of 2016, were held including several large events and more than thirty smaller engagement opportunities throughout the process. The process engaged over 1,000 residents from all areas of the city. The Community Greening Plan released in January 2017, established the specific priorities and forms of green stormwater infrastructure (GSI) that were compared with other wet weather control alternatives under the CBH2OPP.

Stakeholder involvement in the Greening Plan is a key part of stakeholder involvement for the CBH2OPP since the entire rationale for the Greening Plan is to achieve wet weather control in a way that supports multi-objective community needs. From winter 2016 to Spring 2018, Capital Region Water also participated in over 150 community-lead events where we would provide information on all of our initiatives, including the strategies outlined in the Community Greening Plan and the City Beautiful H<sub>2</sub>O Program Plan.

Capital Region Water continues to be committed to public engagement and will update our stakeholder committees, hold additional public meetings, and go to neighborhood meetings to support implementation of the full breadth of wet weather control measures recommended under the CBH2OPP in 2018 and 2019.

**Comment 9:**

*Section 3.2.3 notes that both the Front Street and Spring Creek Pump Stations are "over 50 years old, and have exceeded its service lives, and in need of significant remedial maintenance and reconstruction." Rehabilitation and upgrading of both stations are identified as Baseline Control Level projects. CRW must explain how the upgrades to the pump stations will contribute to CSO reduction in addition to being one of the Nine Minimum Controls (NMCs).*





### **Response 9:**

Each project is intended to rehabilitate existing pump station structures, replace/repair aged mechanical and electronic equipment, and increase pumping capacity to the maximum extent practical within existing pump station structures. This results in an increase in the hydraulic capacity of the Front Street pump station from 40 mgd to 60 mgd, and at the Spring Creek Pump Station from 18 mgd to 30 mgd. This additional capacity, coupled with recommended baseline improvements to CSO regulators, increases conveyance of wet weather flows to the AWTF, which in turn increases CSO capture during the typical year from 53 percent to 79 percent. As was explained in Cover Letter Response 6, a significant level of detailed engineering analysis is required, and the total effort far exceeds the expectations of the NMCs.

### **Comment 10:**

*Section 4 presents a discussion of CRW's problem analysis and priorities. It appears that CRW is prioritizing asset management issues rather than CSO control and SSO elimination needs.*

### **Response 10:**

CRW disagrees with EPA's assessment, as was stated in Cover Letter Response 7:

- EPA's review comments reflect an apparent misunderstanding of the CRW CBH2OPP, which recognizes that, due to the condition of the systems, many projects must be completed first to stabilize and strengthen the current structures and mechanical equipment before steps can be taken to maximize regulator, interceptor and pump station conveyance capacities.
- In the immediate implementation phase (years 1 through 10), CRW has recommended projects that fulfill both critical system rehabilitation needs AND maximization of the hydraulic capacity of existing infrastructure. Specific details are provided in Attachment Tables 1 through 4. The CBH2OPP proposes a series of joint rehabilitation and capacity enhancement modification projects, all to consistently achieve the full hydraulic capacity of CRW's conveyance systems (i.e., regulators, interceptors, and pumping stations), deliver as much flow to the Advanced Wastewater Treatment Facility (AWTF) as practical, and consistently provide primary treatment of this flow. As previously stated, the projected performance of these improvements should increase CSO capture from 53% to 79% system-wide.
- During near-term, mid-term, and long-term implementation phases (beyond year 10), CRW expects to extend this approach into the collection system, seeking opportunities to increase the conveyance and/or storage capacity of collection system pipes replaced to address structural deterioration issues. In addition, CRW will identify opportunities to integrate underground storage into system rehabilitation projects AND incorporate green infrastructure into restoration of surface features (i.e., roads, parking lots, parks, etc.) This integrated approach is expected to increase the overall cost-effectiveness of the program.



**Comment 11:**

*Figures 4-1 and 4-2 illustrate predicted peak typical year hydraulic grade lines (HGLs) compared to CSO weir elevations along the Front Street Interceptor and the Paxton Creek Interceptor, respectively. These figures illustrate how many weirs are at low elevations, relative to their interceptor invert, and these interceptors need to be candidates for weir height increases.*

**Response 11:**

The existing narrative within Section 8.2.1 of the Plan, along with Table 8.2-2, makes it clear that the baseline level of control includes making modifications to most CSO regulator structures to maximize the capture of CSO discharges and optimize hydraulic performance. These modifications include raising the crest elevations of the diversion dams at regulator structures where such actions are beneficial and feasible (i.e., would not cause upstream flooding).

**Comment 12:**

*Section 4.3.2 presents individual CSO regulators' current performance statistics. Overall combined sewage percent capture is identified as 53%. CRW must clarify and confirm exactly how it is calculating percent capture, and how combined flow is defined and calculated.*

**Response 12:**

Capture of combined sanitary and stormwater flows requires first that wet weather events are defined. A wet weather event begins either when the flow in the pipe connecting the regulator to the interceptor increases to more than 5 percent of the dry weather baseflow or when combined sewer overflows begin. The event ends when flow conditions return to less than 5 percent of dry weather flow or the CSO ceases. Capture calculations are performed in two steps. Under existing conditions, captured volume is the volume of combined sewer flow that is sent to the AWTF during a wet weather event. In alternatives with CSO controls in place, captured volume includes both the volume sent to the AWTF plus the volume prevented from reaching the combined sewer system by source controls (infiltrated, evaporated, and/or transpired runoff volume). Percent capture is calculated as the ratio of the captured volume in a given alternative or scenario, during the sum of all the defined wet weather periods during the modeled typical year, to the sum of captured volume and volume overflowed to receiving waters in the existing condition.

The capture calculations are performed at each regulator. Each of the regulators is assigned to an interceptor system and the capture results from each regulator can be aggregated for that interceptor system. These results from the interceptors are further aggregated by the entire combined sewer system.

**Comment 13:**

*If CRW's draft LTCP were to be fully implemented as-is, the system would still have 30 to 50 CSO overflows in a typical year. Bacteria can be persistent in the environment as it does not wash down stream after a wet weather event. All bacteria, including fecal indicators such as Escherichia coli (E. coli) or enterococci, possess the ability to attach to inorganic and organic surfaces such as rocks, pipes,*



*or other surfaces. After attachment, sessile bacteria may excrete a slime coating and create what is known as a protective biofilm. Biofilms can pose a significant health risk and the Centers for Disease Control and Prevention estimate that 65 percent of human bacterial infections involve biofilms. Because of the protective nature of biofilms, approximately 1,500 times more of an antimicrobial agent can be required to kill bacteria within biofilm than planktonic bacteria.*

### **Response 13:**

The first comment statement incorrectly categorizes the immediate (years 1 through 10) and near-term (years 11 through 20) implementation phases of the Plan as being “fully implemented.” As previously stated in Cover Letter Response 2, the ultimate goal of the CBH2OPP is to meet water quality objectives for designated uses, which will require multiple implementation phases beyond year 20. Our approach is summarized below:

- Attachment Tables 1 through 4 define specific and anticipated projects through year 10, which may be revised, and/or new projects identified through the adaptive management process, based on an assessment of ongoing CCTV inspections, implementation complications, and/or new opportunities.
- The FCA will be revised if necessary to quantify additional budget resources available for Plan implementation during years 11 through 20. Specific projects will be identified based on the completed CCTV inspections, and projects will be prioritized as “affordable” under the new FCA, subject to revisions through the adaptive management process.
- After completion of the “adapted” projects through year 20, the H&H model will be updated to reflect completed projects and revalidated to available monitoring data and used to refine the projected CSO control benefits of the projects implemented.
- The adaptive management approach will continue beyond Year 20 as necessary to define the additional control measures and projects needed to meet water quality objectives for designated uses.

CRW acknowledges EPA’s subsequent comment statements, but is unaware of local receiving water data linking biofilms to CRW’s CSO discharges:

- Existing water quality data near Harrisburg does not demonstrate the presence of biofilms.
- Existing water quality data near Harrisburg does not demonstrate elevated bacterial concentrations associated with biofilms.
- Existing water quality data near Harrisburg does not identify the source of bacteria that may contribute to biofilms.
- Existing DEP water quality standards for fecal coliform focus on bacterial concentrations within the water column.



- Known hydraulic complexities in the Susquehanna complicate simple characterizations of pollutant sources, fates, and impacts.

As indicated in the CBH2OPP, CRW would like to partner with EPA, DEP, and/or other entities to evaluate bacteria-related water quality issues in the Susquehanna River with a goal of establishing site-specific water quality-based criteria for wet weather conditions. CRW further proposes that such studies be incorporated into the adaptive management approach outlined under the CBH2OPP. Until such studies are completed, definitive predictions relating CSO control to water quality outcomes remain elusive.

**Comment 14:**

*Tables 4-8 and 4-9 present statistics regarding the number of trunk sewer manholes in the CRW combined system that are currently subject to surcharge in one-year through 10-year design storms. Table 4-9 suggests almost 100 manholes may experience overflows in storms as small as the one-year event. CRW should consider more to address this issue in the manholes' associated sewer segments to decrease the number of manhole overflows.*

**Response 14:**

The comment states CRW should consider more to address this issue, which is defined as an unauthorized release in the Partial Consent Decree and prohibited under Paragraph 34 of the Partial Consent Decree. Indeed, CRW has identified the control of unauthorized releases to be a priority equivalent to CSO control, SSO control, MS4 control, and infrastructure rehabilitation. One of the primary reasons for recommending the decentralized green-grey stormwater control strategy was its use of multi-objective stormwater controls within the collection system designed to jointly reduce CSOs and relieve local system backups/surcharging that contribute to prohibited unauthorized releases.

Specific multi-objective decentralized green/grey stormwater control projects scheduled for implementation within the collection system during the first 5 years of Plan implementation are identified in Attachment Tables 3 and 4. Additional opportunities and projects beyond the 5-year mark will be identified as CCTV inspections are completed and implemented through the adaptive management process:

- For many of the planning areas, proposed baseline controls include interceptor backflow prevention measures such as replacing the existing Brown and Brown regulators and providing simple backflow prevention devices such as flap gates. These measures would prevent potential backup from interceptor surcharging from impacting trunk and collection sewers in the vicinity.
- Most of the Planning Area subsections of Section 8 describe Local Control Strategy 1, which proposes decentralized green/grey stormwater controls to address CSOs and unauthorized releases (e.g., manhole overflows, basement backups) within the same project investments. As CCTV inspections are completed, the adaptive management process will identify collection



system renewal, street improvement, redevelopment, and/or other associated project opportunities able to incorporate decentralized green-grey stormwater controls sized to control both CSOs and unauthorized releases.

**Comment 15:**

*Table 4-11 provides statistics regarding the number of manholes in the CRW separate system that are currently subject to surcharge in one-year through 10-year design storms. Table 4-11 suggests that a limited number of manholes may experience overflows in storms two-year frequency or larger. CRW should consider more to address this issue in the manholes' associated sewer segments to decrease the number of manhole overflows.*

**Response 15:**

Similar to the response to Comment 14, the existing plan recommends decentralized green-grey stormwater control measures to address SSOs, including surcharged manholes, basement backups, and other unauthorized discharges within separate sanitary sewer systems. CRW notes, however, that the instances of sewer surcharging reported in the CBH2OPP are based solely on hydraulic modeling, and lack field confirmation to support the need for such controls. CRW's *Separate Sanitary Sewer Capacity Assessment Report*, submitted April 1, 2017, recommends that CRW proactively monitor wet weather conditions in these areas by tracking service requests to determine if model projections represent actual problems. The current plan identifies specific projects for the first 5 years of implementation and the requested additional measures will be identified and implemented through the adaptive management process as CCTV inspections and service request reviews are completed.

**Comment 16:**

*Section 4.6.1 discusses existing water quality issues. Table 4-13 presents designated use attainment status information, but it should more clearly identify the current attainment status, by waterbody segment number. CRW must clearly identify all individual water quality parameters for which standard exceedances have occurred in each receiving water.*

**Response 16:**

The PCD required CRW to submit memoranda summarizing existing water quality issues and pollutants of concern (December 29, 2014), and sensitive areas (April 1, 2016). EPA comments to each of these submittals were discussed in person and/or in written responses. Furthermore, the data supporting these memoranda were obtained from published, readily-accessible reports and DEP databases, which CRW has no reason to question. All these previous submittals are documented in the CBH2OPP and included on CRW's web site as supporting information. CRW believes, based on this prior communication with EPA, that these submittals have been accepted and, as such were summarized in the CBH2OPP. Unless further evidence of deficiencies is provided by EPA/DEP, CRW stands by the conclusions of these memoranda and their summaries in the CBH2OPP.



**Comment 17:**

*Section 4.6.5 discusses pollutants of concern (PoC). CRW has identified the following PoCs:*

- *Susquehanna River – Bacteria*
- *Paxton Creek – Sediment, Bacteria, Dissolved Oxygen/BOD*
- *Unnamed Tributary, Spring Creek – Sediment, Nitrogen/Phosphorus*
- *Chesapeake Bay – Sediment, Nitrogen/Phosphorus*

*The identification of PoCs must be based upon the consideration of all pollutants found to be in exceedance of applicable water quality standards. As noted above, it is not clear that CRW has considered all such pollutants. Having noted that, the identification of bacteria in the Susquehanna and sediment, bacteria, and DO/BOD in Paxton Creek (the two waters directly receiving CRW's CSO discharges) appears to be appropriate. CRW must confirm it has identified all PoCs for the Susquehanna River and Paxton Creek.*

**Response 17:**

See response to Comment 16.

**Comment 18:**

*Section 4.6.6 summarizes CRW's Sensitive Area and priority area findings. CRW identifies no Sensitive Areas or priority areas, despite contact recreation in the Susquehanna River, primarily from City Island. CRW notes that the River's cross section and the resulting flow patterns in the River prevent significant cross-river mixing. EPA has observed kayakers in the Susquehanna River adjacent to the Front Street Pump Station. CRW failed to provide information demonstrating that swimmers and kayak users from City Island do not venture towards the River's west bank and its CSO's discharge plumes.*

**Response 18:**

See response to Comment 16.

**Comment 19:**

*Section 6 identifies and discusses a list of CSO control technologies. One conveyance technology included is sewer rehabilitation. Sewer rehabilitation is primarily an asset management technology rather than a CSO control technology. Except in limited circumstances, sewer rehabilitation has limited effectiveness in reducing CSO discharge volumes or impacts. As noted above, CRW has proposed to spend a significant amount of the total dollars that it characterizes as affordable on collection system and Advanced Wastewater Treatment Facility (AWTF) rehabilitation. CRW has suggested that much of this rehabilitation expenditure will serve both purposes; however, CRW must provide support for that assertion.*



### **Response 19:**

While sewer rehabilitation alone may have limited effectiveness in reducing CSO discharge volumes or impacts, as stated previously, the CBH2OPP is an integrated municipal stormwater and wastewater plan that addresses CSOs, SSOs, MS4s, TMDLs and other sources of water quality impairment, as stated in the response to Comments 14 and 15. The decentralized green-grey stormwater control strategy described in the CBH2OPP would integrate sewer rehabilitation projects with green/grey stormwater management control opportunities. For example, where analyses show it is cost effective, defective pipe reaches could be replaced with oversized pipes to provide peak shaving flow equalization. Alternatively, green stormwater infrastructure (GSI) measures such as street trees, sidewalk planters, rain gardens, surface and subsurface storage, and porous pavement could be integrated into the sewer rehabilitation projects to reduce effective impervious area and reduce runoff peaks/volumes reaching the sewer system. Flow attenuation and/or runoff peak/volume reductions would both increase CSO capture and reduce CSO frequency/duration.

### **Comment 20:**

*Section 6 also includes in-stream storage and a group of "receiving water" technologies. In-stream storage is technically possible in a limited number of cases; however, regulatory and public acceptance challenges make this technology rarely worthy of serious consideration. The "receiving water" technologies may prove useful in addressing existing receiving water issues; however, they generally do not directly provide CSO control benefits. CRW did not consider offline storage like box culverts. Box culverts are good controls for CSO system with high frequency low volume overflows like the Harrisburg system. The LTCP must be revised to include evaluation of offline storage controls, such as box culverts.*

### **Response 20:**

Since the CBH2OPP is an Integrated Municipal Stormwater and Wastewater Plan, it is appropriate to provide a broader range of feasible technologies than those suited only for CSO control. CRW did evaluate box culverts as one of several means of achieving satellite storage, typically in conjunction with potential consolidation sewers, in its evaluation of local control strategies in Chapter 8. Furthermore, Chapter 8 presents a "knee of the curve" cost-performance evaluation of a broad range of local satellite storage options, including a site-specific evaluation of the specific control points plotted on each curve. Since ambiguity exists with regard to the ultimate level of control required, approximate facility sizes can be extrapolated from the curves at this time, with design studies conducted if an alternative is deemed necessary under the adaptive management approach.

### **Comment 21:**

*Section 7 presents CRW's FCA. CRW has confined its FCA to the City of Harrisburg. In applying costs to the City, CRW has apportioned rehabilitation costs to its wholesale customers; however, CRW has assumed that the City will bear the CSO control costs and has utilized the City's mean household income (MHI), rather than that of the entire service area. This is significant, as wholesale customers make up*



*roughly more than half of the service population and the service area MHI appears significantly higher than the City's (see Figure 7-5). CRW must respond to EPA's letter dated September 9, 2016 and submit an FCA which follows EPA's Guidance for Financial Capability Assessment and Schedule Development, dated February 1997, and the requirements of Section V.E. of the PCD. CRW must also incorporate all current and projected costs for all satellite customers for whom they collect wastewater.*

#### **Response 21:**

It appears from the comment that EPA may have misunderstood the FCA as it pertains to the allocation of the Plan costs to the wholesale customers of the system. The FCA that was submitted with the CBH2OPP on March 29, 2018 (summarized in Section 7) made considerations for the wholesale customers located outside of the City, factored in that the wholesale customers are anticipated to pay for their proportionate share of conveyance and treatment costs, and also considered the anticipated wholesale payments to CRW as a source of revenue to pay for the projected future cost of the wastewater system. The FCA appropriately allocated current and projected future wastewater system costs, including CSO and other wet-weather control-related costs, among City and wholesale customers in accordance with the type and level of service provided to these customers, and in accordance with industry-accepted cost of service principles. CRW does not provide wastewater collection services to these wholesale customers, and in accordance with inter-municipal agreements, as well as cost of service principles, these customers do not share in CRW's collection related costs. However, the FCA reflects the wholesale customer's contribution of revenues for paying for treatment and conveyance-related costs. For example, the FCA that was submitted reflects that approximately 57 percent of the wastewater treatment-related costs and 54 percent of the wastewater conveyance costs are borne by the wholesale customers of the system. As such, the City share of treatment and conveyance costs were reduced in the FCA to reflect the wholesale customer's share of the responsibility for paying for these costs.

Furthermore, projected future wastewater system costs, including CSO and other wet-weather control-related costs, were also allocated to CRW's wholesale customers, and the Plaintiff's statement that *"In applying costs to the City, CRW has apportioned rehabilitation costs to its wholesale customers; however, CRW has assumed that the City will bear the CSO control costs..."* is incorrect and entirely false. In fact, the FCA reflects that the projected interceptor, pump station, and treatment plant capital projects will be allocated to wholesale customers in proportion to the wholesale customer's flow contributions to the wastewater system. As such, the City share of projected treatment and conveyance costs under the proposed plan have been reduced to reflect the wholesale customer's share of the responsibility to pay for these costs.

The Plaintiffs are correct in their statement that *"CRW has utilized the City's mean household income (MHI), rather than that of the entire service area."* However, in doing so, CRW has appropriately reflected the revenue contribution and cost share that is anticipated to be borne by the wholesale customers (as described above). CRW cannot simply charge wholesale customers for the costs of improvements to the components of the wastewater system that they do not use or benefit from just because the wholesale customer community's MHIs are higher than that of the City.





In response to the Plaintiff's demand that *"CRW must also incorporate all current and projected costs for all satellite customers for whom they collect wastewater"*, we offer the following response. We believe the EPA position to be an expansion in the scope of the FCA requirements beyond the "Harrisburg Sewer System" as specified in paragraph 18 of the PCD. However, to facilitate future discussions between CRW and EPA staff and consultants, we would like to verify and confirm with EPA that the basis for their conclusion that the "FCA is deficient" is based on CRW's not incorporating the MHIs of the satellite suburban customer municipalities. That said, it is understood that to meet scheduling objectives for the Plan, assumptions and estimates for these satellite customer costs will need to be made.

However, the projected costs associated with all satellite customers for whom CRW collects wastewater are not currently available or known. CRW does not own, operate, or maintain these satellite customer wastewater collection systems, has no knowledge of studies that have been completed by the satellite communities with respect to forecasting total wastewater system costs over a long-term planning period, and has no jurisdiction over these satellite communities to require the satellite communities to complete and provide CRW with the results of such studies to be able to accurately forecast these costs. That said, if the Plaintiffs insist that CRW must incorporate all current and projected costs for all satellite customers, assumptions and estimates for these satellite customer costs will need to be made.

Based on the teleconference with CRW and EPA held on November 1, 2018, we also understand that a primary concern of the EPA is that the Residential Indicator calculation in the FCA that was submitted did not include CRW's total projected costs of compliance, but rather the amount of future capital spending that would result in CRW reaching the high burden level. To proceed with the requested refinement of the FCA, we anticipate that CRW and EPA staff and consultants will meet and discuss what these total projected compliance costs and what the related satellite community cost assumptions will need to be, and the magnitude of the associated estimated costs.

In response to the Plaintiff's demand that *"CRW must respond to EPA's letter dated September 9, 2016 and submit an FCA which follows EPA's Guidance for Financial Capability Assessment and Schedule Development, dated February 1997, and the requirements of Section V.E. of the PCD"*, we offer the following response. As discussed above, the FCA that was prepared and submitted complies with paragraph 18 of the PCD, and was prepared in general accordance with EPA's *Guidance for Financial Capability Assessment and Schedule Development, dated February 1997* based on the best available information at the time that the assessment was prepared. EPA's letter dated September 9, 2016 requested that CRW submit a complete FCA, which was in fact submitted as part of the CBH2OPP, dated March 29, 2018. EPA's letter also stated that the initial April 1, 2016 FCA that was provided by CRW to EPA *"does not include consideration of the wholesale customers located outside of the City of Harrisburg. Wholesale rates should be included in the financial analysis because wholesale rates reduce the total retail costs applied to the CRW wastewater system."* As explained above, the FCA that was submitted with the CBH2OPP on March 29, 2018 made appropriate considerations for the wholesale customers located outside of the City, factored in that the wholesale customers are anticipated to pay for their proportionate share of conveyance and treatment costs, and considered current and projected wholesale revenues as another source of revenue to pay for the projected



future cost of the wastewater system. Therefore, we believe we have satisfied the requirement to provide the Plaintiffs with a full and complete FCA. However, as discussed above, CRW will continue to coordinate with EPA staff and consultants to revise the Residential Indicator calculation of the FCA to reflect the satellite community incomes and system costs and to reflect total projected cost of compliance, rather than the amount that results in CRW meeting the high burden threshold.

**Comment 22:**

*Section 8.1 identifies the control objectives (levels of control or "LoCs") that were the focus of CRW's alternative analysis:*

- *Baseline LoC — Based upon an optimization of the existing collection system and AWTF.*
- *Affordable LoC — Based upon an allocation of the total dollars CRW has determined to be affordable.*
- *Cost-effective LoC — Based upon a knee-of-the-curve analysis, with costs including the allocated rehabilitation costs, as discussed above.*
- *Presumptive LoC — Based upon the achievement of 85% capture systemwide.*

*It should be noted that the first three LoCs do not target specific performance levels, such as numbers of overflows per year, but instead are based upon primarily cost criteria. As such, the foundation of CRW's alternative analysis is not consistent with the CSO Control Policy's requirement to consider a range of control levels based upon performance metrics, such as number of activations or percent capture. Nor is it consistent with the PCD, which states that the alternatives analysis is not intended to consider cost. It is noted that CRW has presented performance and cost information for alternatives in addition to those identified for the control objectives (for example, see Figure 8.3-2); however, in several cases the sizing of these additional measures appears to have been somewhat random.*

**Response 22:**

CRW recognizes EPA's comment on the LoC presentation but disagrees with EPA's interpretation of CRW's intent and the conclusion that the LoCs within the Plan are inconsistent with the requirements of the CSO Policy and the PCD. The PCD and the CSO policy require CRW to perform a "knee-of-the-curve" cost-performance evaluation across a full range of alternatives and CSO control levels. The cost-performance curves presented in the CBH2OPP meet this requirement, illustrating a full range of control from the existing condition through complete combined sewer overflow reduction (through sewer separation). Further, a graphical representation of the range of CSO frequency and duration is presented for each planning area and each control strategy.

The LoC's presented on the curves are intended to facilitate comparisons of cost-effectiveness among the alternative control strategies and provide insight into appropriate implementation phasing. The performance cost evaluation was not limited by the LoCs or developed around these control levels. Instead these were used to identify various economic and performance thresholds along the curves. They are not intended to represent proposed CSO control "end points."

LoCs beyond 85 percent capture may be necessary for some CSOs to meet water quality objectives for designated uses but were not illustrated in the CBH2OPP because of CRW's decision to focus on



the immediate and near-term implementation phases, defined as what CRW could afford to invest within the first 20 years. Potential investments for the mid-term and long-term implementation phases (beyond year 20) can be derived from the cost-effectiveness curves as well:

- Table A provides the required percentage of impervious area directed to decentralized green-grey stormwater controls (the recommended alternative) to achieve a range of CSO capture and overflow frequency for each planning area. Color-coding of this table indicates that CRW's Community Greening Plan identified control of approximately 320 acres (21 percent) of the impervious area as a high-potential for implementation of green stormwater infrastructure, and control of another 630 to 850 acres (40 to 55 percent) of impervious area as a moderate potential for green stormwater infrastructure implementation. The higher end of the moderate potential requires more street and right-of-way retrofits to manage runoff from more impervious area.

**Table A: Percent of Impervious Area Directed to Decentralized Green-Grey Stormwater Controls to Achieve Given Level of Control**

| Planning Area            | Impervious Area | No CSOs 99% of Typical Year <sup>1</sup> | 85% Capture during Typical Year | 20 overflows/year      | 4 Overflows/year    |
|--------------------------|-----------------|--|---------------------------------|------------------------|---------------------|
| Riverside                | 54              | Baseline                                 | 0% - 10%                        | 0% - 10%               | 80% - 90%           |
| Uptown                   | 246             | 20% - 30%                                | 30% - 40%                       | 60% - 70%              | 90% - 100% +        |
| Middle Front Street      | 131             | Baseline                                 | 0% - 10%                        | 10% - 20%              | 80% - 90%           |
| Lower Front Street       | 59              | Baseline                                 | 10% - 20%                       | 20% - 30%              | 80% - 90%           |
| Upper Paxton Creek West  | 161             | Baseline                                 | 0% - 10%                        | 10% - 20%              | 80% - 90%           |
| Upper Paxton Creek East  | 28              | Baseline                                 | 20% - 30%                       | Baseline               | 80% - 90%           |
| Middle Paxton Creek West | 97              | 0% - 10%                                 | 0% - 10%                        | 20% - 30%              | 90% - 100% +        |
| Middle Paxton Creek East | 201             | 0% - 10%                                 | 20% - 30%                       | 30% - 40%              | 90% - 100% +        |
| Lower Paxton Creek       | 509             | 50% - 60% <sup>2</sup>                   | 40% - 50% <sup>2</sup>          | 70% - 80% <sup>2</sup> | 90% - 100% +        |
| Hemlock Street           | 68              | Baseline                                 | 0% - 10%                        | 20% - 30%              | 80% - 90%           |
| <b>System Total</b>      | <b>1556</b>     | <b>15% - 25%</b>                         | <b>20% - 30%</b>                | <b>45% - 55%</b>       | <b>90% - 100% +</b> |

| <b>GSI Ease of Implementation from Community Greening Plan</b>  |
|---|
| <b>High:</b> Value less than or equal to High Potential GSI drainage area identified  |
| <b>Moderate-High:</b> Value greater than all High Potential GSI drainage area and less than or equal to Moderate Potential GSI drainage area  |
| <b>Moderate:</b> Value greater than all Moderate Potential GSI drainage area and less than or equal to High plus Moderate Potential GSI drainage area   |
| <b>Moderate-Low:</b> Value greater than all Moderate Potential GSI drainage area and less than or equal to High plus Moderate Potential GSI drainage area and includes and requires greater street/right-of-way retrofits |
| <b>Low:</b> Value greater than sum of High plus Moderate Potential GSI area   |

Notes: 100% + indicates additional infrastructure needed to achieve LoC for this Catchment

Decentralized Green-Grey Stormwater Controls sized to capture 1.5 inches of runoff and infiltrate it and/or release slowly to combined sewer system



<sup>1</sup> Assumes that a total CSO duration of less than 88 hours during typical year would meet water quality criteria at least 99% of time, Per Pa Code Chapter 96.3.

<sup>2</sup> Includes some stormwater management of separate storm sewers in S-048, as described in Attachment Table 4.

Table B provides the cost associated with each control level at each Planning Area. The cost of recommended baseline improvements to the conveyance system and AWTF is also included. While this table focuses on the cost to implement the recommended alternative (the decentralized green-grey stormwater control strategy), review of the cost-performance curves in the CBH2OPP indicate that the cost to implement other local control strategies (i.e., partial separation and satellite storage/treatment) also lie in these ranges.

**Table B: Estimated Cost to Achieve Given Level of Control Under the Decentralized Green-Grey Stormwater Control Strategy**

| Planning Area                                   | No CSOs 99% of Typical Year <sup>1</sup> | 85% Capture during Typical Year | 20 overflows/year      | 4 Overflows/year         |
|---|--|---------------------------------|------------------------|--------------------------|
| Baseline Improvements to Conveyance System/AWTF | \$36.8M - \$78.8M                        | \$36.8M - \$78.8M               | \$36.8M - \$78.8M      | \$36.8M - \$78.8M        |
| Riverside                                       | \$0.0M                                   | \$3.1M - \$6.7M                 | \$4M - \$8.5M          | \$18.5M - \$39.7M        |
| Uptown  | \$29.2M - \$62.6M                        | \$45.5M - \$97.5M               | \$70M - \$150M         | \$93M - \$199M           |
| Middle Front Street                             | \$0.0M                                   | \$6.8M - \$14.6M                | \$11.3M - \$24.2M      | \$44M - \$94.3M          |
| Lower Front Street                              | \$0.0M                                   | \$6.2M - \$13.4M                | \$7.9M - \$17M         | \$19.5M - \$41.8M        |
| Upper Paxton Creek West                         | \$0.0M                                   | \$10.4M - \$22.2M               | \$18.8M - \$40.3M      | \$57M - \$121M           |
| Upper Paxton Creek East                         | \$0.0M                                   | \$4M - \$8.5M                   | \$0.0M                 | \$9.4M - \$20.2M         |
| Middle Paxton Creek West                        | \$0.0M                                   | \$8M - \$17.1M                  | \$15.6M - \$33.4M      | \$33M - \$70M            |
| Middle Paxton Creek East                        | \$0.0M                                   | \$24.9M - \$53.4M               | \$34.7M - \$74.3M      | \$79M - \$170M           |
| Lower Paxton Creek                              | \$115M - \$247M                          | \$104M - \$224M                 | \$161M - \$346M        | \$196M - \$420M          |
| Hemlock Street                                  | \$0.0M                                   | \$4.4M - \$9.5M                 | \$9.3M - \$20M         | \$23.5M - \$50.3M        |
| <b>System Total</b>                             | <b>\$181M - \$388.4M</b>                 | <b>\$250M - \$550M</b>          | <b>\$370M - \$800M</b> | <b>\$610M - \$1,300M</b> |

Notes: 100% + indicates additional infrastructure needed to achieve LoC for this Catchment

Decentralized Green-Grey Stormwater Controls sized to capture 1.5 inches of runoff and infiltrate it and/or release slowly to combined sewer system

Cost of decentralized green-grey stormwater controls presented with a +50/- 30% range to represent site-specific uncertainty

<sup>1</sup> Assumes that a total CSO duration of less than 88 hours during typical year would meet water quality criteria at least 99% of time, Per Pa Code Chapter 96.3.

The range of LoCs depicted in the Tables include capture percentages and annual overflow frequencies/durations spanning a range of control necessary to meet water quality objectives for various designated uses. Under the adaptive management approach CRW will work with DEP to



assess receiving water quality conditions, clarify site-specific water quality objectives, and define the specific LoC for CSOs, MS4s, and other pollutant sources necessary to achieve these objectives.

**Comment 23:**

*Section 8 presents cost estimates for both systemwide and Planning Area-specific controls and utilizes those costs to assess the affordability of various LoCs. These costs appear to be based largely upon the City of Philadelphia's 2009 cost document, except for GI costs that were based upon a later Philadelphia document." CRW notes that costs were updated using the Engineering News Record Construction Cost Index and adjusted to the Harrisburg area using the RS Mean factor for Harrisburg. Costs for certain technologies are inflated, for example, storage basins are costed on a per-unit basis. CRW must provide additional detailed breakdowns regarding the systemwide and Planning Area alternatives cost estimates.*

**Response 23:**

The Section 8 cost-performance curves were developed by defining site-specific alternatives, their estimated construction costs, and projected CSO performance. In general, these are the "points" itemized on each cost-performance curve. The "lines" connecting these "points" allow costs to be extrapolated across a range of CSO performance levels, supporting the cost-performance evaluation of alternative control strategies required by the partial Consent Decree. A representative set of more detailed cost summaries for select "points" along the cost-performance curves are provided in Attachment Figures 2, 3 and 4 illustrate how the cost-performance evaluation reflects "real-world" conditions in Harrisburg.

**Comment 24:**

*Section 8.3.1 presents the results for CRW's first of two systemwide control strategies. The first strategy is based upon increasing conveyance and treatment capacity at the AWTF. One alternative that should be evaluated is treatment capacity at the third control point (see Section 8.3.1.1). This strategy would double total system conveyance and treatment (through primary treatment) capacity to 240 million gallons per day (MGD). It would result in an 86% capture, as well as CSO activations ranging from 0 to a maximum of 15 times in the typical year. The opinion of probable present value cost for this option is \$431 million. CRW must provide a more detailed breakdown of this cost opinion, as it is assumed that it achieves the addition of primary capacity via conventional primary clarifiers. Substitution of either an earthen storage basin or an alternative treatment technology (such as cloth media disk filters) should be considered, as it might allow for a meaningful reduction in cost at the same performance level point.*

**Response 24:**

The alternative identified in the comment is comprised of parallel interceptors/conveyance piping, expanded pump stations, and high rate weather treatment at a centralized location. A range of treatment technologies was considered in preparation of the alternative, but it was found that the conveyance of wet weather flows to a centralized treatment facility (at the AWTF or similar location) was the significant cost driver – nearly 90% of the alternative cost (outside of baseline system



improvements). More detailed cost estimates for this alternative are provided (see Attachment Figure 3).

**Comment 25:**

*Section 8.3.2 presents the results for CRW's second of two systemwide control strategies. The second strategy is based upon deep tunnel storage/conveyance. Only two tunnel lengths were examined (30,000 feet and 45,000 feet) and two diameters considered (10 foot and 15 foot). Tunnel volumes ranged from 14 MG to 64 MG. Additional options, including a hybrid option that combines a single tunnel with other controls, or shorter storage tunnels that target a limited number of the largest CSOs (such as CSOs 8, 9, 50, 51, and 48), should be considered.*

**Response 25:**

See response to Comment 5.

**Comment 26a:**

*Section 8.4 presents the localized control strategy results, with those for each Planning Area presented in a separate section.*

*a) In each Planning Area section, CRW summarizes the Baseline LoC Improvements to be implemented with the planning area (e.g., Table 8.4.1-2 for Riverside). These tables provide estimated unit baseline implementation costs in \$/1,000 MG (presumably that is \$/1,000 MG/typical year). It appears that only the in-area specific costs are included in these tables (one of which is presented in each Planning Area section), but not the apportioned collection system and AWTF costs. Later in each section, CRW notes how those area-specific costs are included in that area's apportioned piece of the overall Baseline LoC cost. CRW must provide a summary table for each of the four LoC's illustrating how the Planning Area costs for each LoC "fit" together.*

**Response 26a:**

Attachment Table 5 compare the cost-performance of the two systemwide and three local control strategies evaluated under the CBH2OPP. In general, this figure and this table demonstrate that the cost-performance of two local control strategies (i.e., decentralized green-grey stormwater control and satellite storage-treatment) is largely equivalent to the systemwide conveyance-treatment strategy. Note that findings vary somewhat by planning area but are generally consistent with this systemwide depiction.

While the cost-performance of these three control strategies are similar with respect to CSO control, the triple-bottom line alternative evaluation summarized at the end of Section 8 of the CBH2OPP found that the decentralized green-grey stormwater control strategy provides unique additional benefits, leading to its recommendation:

- It is the only control strategy where a single facility is able to control both CSOs and unauthorized releases.



- It can be implemented more cost-effectively where opportunities exist to integrate stormwater controls into sewer rehabilitation and/or land development projects.
- It provides community revitalization benefits to CRW rate payers that no other control alternative provides.
- It presents opportunities for cost-sharing, reducing the burden of CSO control on CRW rate-payers.

**Comment 26b:**

*b) Areas of opportunity for GI are identified on maps of each CSO Planning Area. Estimated costs are provided for each Planning Area for CRW's "Baseline," "Affordable," and "Presumptive" LoCs. CRW must provide additional information regarding the GI assumptions (such as type(s) of GI assumed and the general design characteristics of each type of GI) used in each Planning Area to generate these costs.*

**Response 26b:**

The cost estimates utilized from Philadelphia Water Department (PWD) documentation provide planning-level opinions of the probable cost (i.e., 50 percent to 30 percent) to install GSI sized to manage 1 to 2 inches of stormwater runoff. Additional costs were added to incorporate control of unauthorized releases during larger design storm events. The PWD analyses encompass a wide range of GSI technologies, including rain gardens/bioswales, sidewalk planters/curb bump-outs, tree trenches, permeable pavement, and infiltration storage trenches, as well as account for likely installation costs in densely developed urban areas. Detailed assumptions of GSI types were not necessary to derive planning level cost estimates, and would require site-specific, design level information. However, the CBH2OPP provides adequate detail to determine if sufficient levels of GSI opportunity exist in planning areas identified in the selected alternative. CRW utilized the Community Greening Plan analyses to make this determination, which is summarized by planning area in the CBH2OPP (see response to Comment 22 for additional details).

**Comment 26c:**

*c) Table 8.4.1- 2 and the equivalent tables in the other Planning Area sections illustrate how CRW's Baseline LoC does not achieve a consistent percent capture or activation frequency across the individual CSOs within a given Planning Area.*

*In the case of Riverside, CSO S-004 achieves a capture of 84% and 24 activations, while CSO S-005 achieves an 87% capture and 16 overflows. At the Baseline LoC, the most frequent activation in each CSO Planning Area is as follows:*

- *Riverside — 24/typical year (CSO-004)*
- *Uptown — 51/typical year (CSO-010 & CSO-011)*
- *Middle Front Street — 34/typical year (CSO-052)*
- *Lower Front Street — 39/typical year (CSO-057)*



- Upper Paxton Creek West — 30/typical year (CSO-027 & CSO-028)
- Upper Paxton Creek East — 15/typical year (CSO-026)
- Middle Paxton Creek West — 57/typical year (CSO-032)
- Middle Paxton Creek East — 41/typical year (CSO-034)
- Lower Paxton Creek — 55/typical year (CSO-048)
- Hemlock Street — 34/typical year (CSO-060)

*CRW provides an average activation frequency, in the case of the Riverside Planning Area 20 activations per typical year. However, an average activation frequency is not a useful metric. The activation rate for a waterbody or a portion of a waterbody is the number of times one or more CSOs activate.*

*CRW does discuss the possibility of implementing additional measures in many of the Planning Areas (see further discussion below). However, given the likely limited magnitude of such additional measures and the lack of certainty regarding their implementation, it appears that the activation frequencies predicted for the Baseline LoC are least representative of what might be achieved by CRW's proposed Plan. CRW should re-evaluate its activation frequencies.*

#### **Response 26c:**

CRW does consider CSO activation frequencies and durations critical parameters for defining ultimate CSO control targets under its adaptive management approach:

- As expressed in our response to Comment 22, CRW used these levels of control and average planning area statistics to prioritize actions in the immediate and near-term implementation periods, not to preclude additional control during the less-well-defined mid-term and long-term implementation periods beyond year 20. The CBH2OPP also presents CSO performance statistics at each CSO as well as planning area averages to assist with implementation decisions.
- While CSO event frequency and duration statistics for each individual outfall were provided in Section 8 of the report, CRW does not agree with EPA's statement that "an average activation frequency is not a useful metric." Receiving water impacts should be evaluated on a reach-by-reach basis, particularly in the case of CRW's system where many CSOs are closely clustered. CRW defined planning areas with receiving water quality evaluation in mind and believes that a range of CSO performance statistics (e.g., volume, duration, frequency, load) all come into play when evaluating water quality impacts. The CBH2OPP presents all these statistics to assist in the evaluation and will use them to support program phasing and implementation under an adaptive management approach.
- CRW also does not agree with EPA's statement that "the likely limited magnitude of such additional measures and the lack of certainty regarding their implementation" will limit CSO control levels. CRW fully intends to continue implementation of decentralized green-grey stormwater controls beyond the 20-year immediate and near-term implementation phases,





with a goal of meeting water quality objectives for designated uses (see response to Comment 22). Under the adaptive management approach, CRW will also evaluate its effectiveness in implementing this decentralized green-grey stormwater control strategy (particularly with respect to shared implementation with land developers, property owners, and other stakeholders), and will re-evaluate (and potentially revise) its preferred control strategy based upon performance trends.

**Comment 26d:**

*d) In each Planning Area, CRW considered three Local Control Strategies:*

- *Local Control Strategy 1: Decentralized GI and/or Grey Infrastructure Controls*
- *Local Control Strategy 2: Satellite Storage and/or Treatment*
- *Local Control Strategy 3: Combined Sewer Separation*

*If a given Planning Area achieved an average Presumptive LoC of 85% by implementation of the Baseline LoC, CRW generally determined that additional CSO control was a low priority within the proposed 20-year planning horizon, especially since two of the CSO catchment areas are predicted to remain very active. This is inappropriate given bacteria as a pollutant of concern in both direct receiving waters and the 1994 CSO Control Policy requires the presumption be reasonable that 85% capture will result in meeting the water quality-based requirements of the CWA.*

**Response 26d:**

CRW's CBH2OPP is an integrated municipal stormwater and wastewater plan that addresses CSOs, SSOs, MS4s, TMDLs, unauthorized releases, and other sources of water quality impairment in a prioritized manner, described as follows:

- In the planning areas where the CBH2OPP identified lower CSO performance following implementation of baseline controls, CRW has set specific targets for priority implementation of decentralized green-grey stormwater controls during the immediate and near-term implementation phases.
- In remaining planning areas, critical sewer rehabilitation and/or redevelopment projects would be combined and integrated with green/grey stormwater controls wherever feasible and able to provide cost-effective wet weather control.

The adaptive management approach will use available information to periodically evaluate implementation opportunities and revise implementation priorities, seeking to maximize cost effective opportunities as described in Chapter 11 (See also the response to Comments 13, 14, 15, and 22).



**Comment 26e:**

- e) *In several Planning Areas, CRW identifies "minimum feasible" sizes for high rate treatment or storage facilities. CRW does not adequately explain why the identified sizes are the minimum sizes that are "feasible," and must do so.*

**Response 26e:**

Minimum feasible sizes for satellite high rate treatment and storage facilities are driven by many factors such as: technology limitations (minimum flow rates for sufficient treatment), facility siting and location feasibility, facility depths below ground surface, and changes in hydraulic conditions for given typical year rainfall patterns and control alternatives (baseline improvements increase high flow durations in the interceptors). Further, CRW's interceptors are located in highly constrained areas: the Front Street Interceptor parallels the Susquehanna River and properties along Front St while the Paxton Creek Interceptor parallels Paxton Creeks' concrete channel, often below/adjacent to existing surface structures. These constraints limit potential facility sites, as discussed in the response to Comment 23. CRW utilized the Baseline Level of Control performance to identify areas where satellite facilities would be most cost-effective at reducing combined sewer overflows and where possible attempted to prepare alternatives that consolidated multiple combined sewer overflow points.

Consolidation was often necessary with the many small CSO catchments in CRW's combined sewer system to achieve minimum flow rates for high rate treatment facilities. Satellite high rate treatment was considered in all areas to identify alternatives to achieve higher levels of CSO capture with sizes identified to achieve given CSO activation frequencies (20, 10, 4, or 0 overflows). Since individual CSO performance is determined by several factors, the minimum size in individual planning areas will vary to achieve those CSO activation frequencies. Satellite storage facilities were considered where CSO performance was relatively poor since satellite high rate treatment facilities are less feasible at lower flow rates and storage can be cost effective at reducing CSO from small rainfall events.

**Comment 26f:**

- f) *Section 8.4.15 discusses the separate Spring Creek Planning Area. The Plan notes that "approximately 94% of the tributary area and over 90% of the dry and wet weather flows into and through CRW's Spring Creek Interceptor" are generated by CRW's wholesale customers. The Plan notes that both the Spring Creek Interceptor capacity and Spring Creek Pump Station capacity are exceeded in the 2-year storm event and that SSOs are predicted to occur. CRW must provide additional information regarding the magnitude of the flows from this interceptor during the typical year to provide a better understanding of the degree to which wet weather flows from the wholesale customers impact the combined sewer system's typical year performance.*

**Response 26f:**

Wholesale customer flow during wet weather periods is up to 80% of the wet weather volume discharged from the Spring Creek pump station to the AWTF, however the planned Spring Creek



Pump Station capacity is greater than the sum of the incoming peak flows from the Spring Creek Interceptor and the Hemlock Creek Interceptor during the typical year. Attachment Figure 5 provides hydrographs of the incoming flows (Hemlock Street Interceptor and Spring Creek Interceptor) to the Spring Creek Pump Station and outgoing flow from the Spring Creek Pump Station for the typical year peak flow event from Spring Creek Pump Station. This event figure shows the sum of the incoming flows (Hemlock Street Interceptor and Spring Creek Interceptor Wholesale and CRW inflows) and the outflow (Spring Creek Pump Station) do not exceed the pump station capacity during this event. The examples suggest that Spring Creek Interceptor is not limiting capture of combined sewage from the Hemlock Creek Interceptor and through the Spring Creek Pump Station, rather Hemlock Street Interceptor system combined sewer flows to the pump station are limited by the hydraulic capacity of the regulator connections and interceptor. However, it should be noted the baseline level of control for the Hemlock Street Interceptor system provides 85% capture of combined sewage volume for this portion of the combined sewer system.

**Comment 27:**

*Section 8.5.1 describes CRW's analysis of alternatives for bypassing at its AWTF. CRW should also consider approaches to provide a higher level of treatment to these bypasses. Such treatment improvements may include the addition of chemical enhancement to the existing primaries or a parallel enhanced sedimentation or filtration technology. Also, CRW must provide an analysis of expanding treatment through the secondary treatment beyond the current 45 MGD.*

**Response 27:**

CRW's AWTF already has chemically enhanced primary treatment as part of the recent upgrade, which will be implemented and tested in conjunction with ongoing upgrades to improve performance (baffles and inlet modifications) in the primary clarifiers up to 80 mgd.

CRW recently upgraded the secondary treatment process to 45 mgd, as described in the CBH2OPP. The secondary improvements were designed to maximize process treatment within the physical constraints of the existing facility. There is not sufficient space at the site to expand the secondary treatment facilities, and the existing facilities are hydraulically limited to 45 mgd. Alternate technologies were not evaluated since the AWTF upgrade was just recently completed.

**Comment 28:**

*Section 9 describes CRW's proposed approach to Plan implementation via an adaptive management strategy. This strategy would rely on two "evaluate and adapt" points within the 20-year planning horizon: one at year 10 and another at year 15. This section needs to be expanded and include discussion of the role of EPA and PADEP in the process, as well as consider adding an evaluate and adapt point at year five.*

**Response 28:**

See response to Comment 7.



**Comment 29:**

*Section 9.2.2.1 discusses pilot and demonstration projects. CRW discusses these projects in a general, and limited information is provided about these projects. CRW mentions that one (of seven) identified pilot project involves the installation of GI in four local parks, but does not discuss this idea any further. CRW needs to provide more detailed information regarding all seven pilot projects.*

**Response 29:**

Please see the Attachment Table 3 summarizing GSI projects to be implemented, their estimated construction cost, the projected project completion date, and the corresponding wet weather control benefits. Four (4) GSI projects are being completed in 2018 and six (6) additional projects are slated for construction in 2019. These projects will provide stormwater control for 14-acres of impervious area.

**Comment 30:**

*Section 9.2.2.3 discusses development-driven source control opportunities. CRW discussed possible future stormwater regulations, and CRW must provide information on whether adoption of such regulations is likely, and if so, the expected timeline for adoption.*

**Response 30:**

As noted in our most recent Semi-Annual Report, existing legal authority is adequate for current regulatory requirements. Capital Region Water reviews all Land Development projects in coordination with the City of Harrisburg and provides final approval for all Stormwater Management Plans. During the Land Development process Capital Region Water works closely with willing Developers and their Engineers to advance stormwater management plans to achieve additional capture or manage peak flows with cost neutral strategies like adjustments to outlet control structures.

Enactment of integrated wastewater/ stormwater regulations to support future regulatory requirements, policy initiatives, and refine our role in land development is anticipated during 2019. Furthermore, it is Capital Region Water's intention to roll out the modified regulations in concert with incentive-driven program components like stormwater credits and/or funding incentives, and incorporate those elements into the regulations.

**Comment 31a:**

*Section 10 presents CRW's Post-Construction Monitoring Plan (PCMP). CRW proposes a two-part PCMP. The first part of the PCMP process will involve annual monitoring to gauge progress and impacts, with the results of that monitoring reported in the annual Chapter 94 reports. The second part of the PCMP process involves a more comprehensive monitoring effort at approximately year 10. CRW will submit the results of this year 10 monitoring effort, presumably to both EPA and PADEP. CRW must address the comments in items a — e below.*



- a) *The PCMP does not contemplate detailed monitoring or reporting at the end of the proposed 20-year planning horizon, as it should.*

**Response 31a:**

Post-construction monitoring was not proposed in implementation Year 20 because CRW does not consider Year 20 to be the end-point of its CSO control program. Under the adaptive management approach, a comprehensive post-construction monitoring time frame and approach will be recommended when the level of control appears to be successfully approaching water quality objectives for designated uses.

As stated later in EPA's review comments, the majority of the costs, improvements, control facilities, and benefits of the proposed Plan are implemented within the first 10 years, identified as the immediate implementation phase within the Plan narrative. The monitoring effort implemented after year 10 is to quantify system flows and CSO discharge frequencies at selected representative outfalls in order to revalidate the hydraulic and hydrologic (H&H) model, and use this model to verify that predicted CSO capture volumes are achieved.

The proposed level of monitoring included in the Plan is expected to continue well after year 20. The existing network of permanent monitoring sites along the interceptor system and at the major points of connection with the suburban community sewer systems will be maintained through the proposed 20-year planning horizon. Similarly, flow monitoring at the pump stations and at the AWTF will continue. The network of precipitation gauges and the Gauge Adjusted Radar Rainfall (GARR) will also be maintained. The data collected from these monitor sites will be integrated into the H&H model simulations used to calculate annual CSO discharge frequencies and volumes to meet NPDES permit and PCD reporting requirements. As part of an ongoing model verification process the interceptor and municipal connection flows and the CSO statistics calculated by H&H model will be checked against those monitored in the field and those reported by daily CRW field staff inspections.

**Comment 31b:**

- b) *The PCMP does not identify what performance criteria will be used to assess compliance; however, Section 11 indicates that percent capture will be the "primary metric for compliance." The 1994 CSO Control Policy requires that a post construction water monitoring program be adequate to verify compliance with water quality standards and protection of designated uses as well as to ascertain the effectiveness of CSO controls.*

**Response 31b:**

See response to Comment 31a. It is not expected that the system improvements and control measures included in the immediate and near-term implementation phases of the Plan (i.e., through year 20) will be sufficient to meet water quality objectives for designated uses. A comprehensive water quality monitoring program, implemented in conjunction with DEP monitoring programs, will be implemented after future Plan phases.



**Comment 31c:**

- c) The Plan contemplates limited flow monitoring to support model validation/recalibration, but must include more.*

**Response 31c:**

CRW respectfully disagrees with the assertion that the proposed level of monitoring effort is insufficient to meet the goals and objectives for this phase of post construction monitoring. The comment did not indicate what areas or monitoring categories were deficient, making it difficult to address the alleged deficiencies. The response to comment 31a makes it clear that the currently proposed level of monitoring activities is sufficient to revalidate the H&H model to reflect system conveyance improvements and implemented control facilities.

**Comment 31d:**

- d) The Plan mentions model validation, but does not adequately discuss what will constitute validation, such as demonstration of a degree of calibration at least as good as achieved prior to use of the model to support LTCP development.*

**Response 31d:**

Specific requirements for model revalidation are the same as the criteria used for original model calibration/validation. These criteria are described in CRW's previously submitted Sewer System H&H Model Report to EPA/DEP that was subsequently accepted by the agencies. Those same criteria will be used to support revalidation of the refined H&H model.

**Comment 31e:**

- e) The Plan states that water quality monitoring will be carried out by "partnering with PADEP." Such a statement could be interpreted as meaning that absent such "partnering" no water quality monitoring will be carried out. The 1994 CSO Control Policy specifically requires the permittee to conduct water quality monitoring to ensure compliance with water quality standards.*

**Response 31e:**

See response to comment 13.

**Comment 32:**

*Section 11 summarizes the Recommended Plan and Implementation Schedule.*

- a) The Recommended Plan Overview (Section 11.1) focuses on the amounts of money CRW is willing to expend ("up to \$113 million...for priority projects...") rather than committing to the implementation of specific projects that will meet the requirements of the PCD or the 1994 CSO Control Policy and is thus not consistent with the PCD or 1994 CSO Control Policy. The LTCP must be revised to correct this.*



### Response 32a:

Attachment Tables 1 through 4 to this response letter identify specific projects to be implemented during the immediate implementation phase, their estimated construction cost, the projected project completion date, and the corresponding wet weather control benefits. Table 1 provides project information for planned improvements to the AWTF. Table 2 provides project information for planned capital improvements to the conveyance system. Table 3 provides project information for CRW collection system GSI projects. Table 4 provides project information for multi-objective CRW collection system projects, identified through CCTV inspections to date, that are expected to rehabilitate structural deterioration AND integrate stormwater controls that reduce CSOs and unauthorized releases.

- b) Because of the amount of resources CRW proposes to dedicate to system rehabilitation, CSO capture will increase to only 79% by year 10, and then only another 1% in the following ten years (see Figure 11-1). CRW must re-evaluate its resources and how they are applied to CSO capture.*

### Response 32b:

As was explained in the response to Comment 10, a baseline level of control consisting of a variety of system renewal and enhancement projects was prioritized for implementation during the immediate implementation phase (initial 10 years) of the CBH2OPP to achieve multiple objectives:

- Increase the hydraulic conveyance capacity of existing regulators, pump stations, and AWTF headworks/primary clarifiers to the full hydraulic conveyance capacity of existing interceptors, increasing CSO capture from 53 percent to 79 percent during the typical year.
- Stabilize and strengthen existing interceptor, pump station, and AWTF structures and mechanical equipment to withstand increased periods of high flow and surcharging during high wet weather flow conditions

Implementation of these “baseline” improvements consumes all of CRW’s bonding capacity and most of its financial capability by Year 8, according to the current FCA, resulting in limited funding for projects during the near-term implementation phase (i.e. years 11 through 20). Remaining financial capacity during this period is targeted at a cost-effective blend of collection system renewal and wet weather control under the recommended alternative, the decentralize green-grey stormwater control strategy. Because the cost of collection system renewal cannot be estimated until comprehensive CCTV inspections are completed, the recommended implementation approach focused on integrated system renewal/stormwater control projects to increase their cost-effectiveness. Attachment Table 4 identifies such multi-objective projects, which have been identified through initial CCTV inspections since the CBH2OPP was submitted. Additional projects will be identified and prioritized through the adaptive management process.

Future phases of multi-objective collection system renewal/decentralized green-grey stormwater control projects are envisioned beyond year 20, as necessary to meet water quality objectives. Future FCA revisions are expected to identify additional funding to support such projects. The



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adaptive management process may also identify opportunities for additional CSO control projects should actual estimated costs be higher than actual implementation costs.

c) *Sections 11.5.1 and 11.5.3 summarize CRW's proposed remedial measures for the first and second 10-year periods, respectively. The descriptions provided must be revised to provide detailed design criteria to commit CRW to specific project scopes.*

**Response 32c:**

See response to Comment 32a. Attachment Tables 1 through 4 summarize the design intent and scope of these improvements. Improvements recommended for years 11 through 20 remain conceptual until CCTV inspections are performed. The design intent and scope of specific projects identified for implementation will be provided for consideration by EPA/DEP under the adaptive management approach as part of annual reports and 5-year *Adaptive Management Plan Update Reports*.

Please contact me directly to discuss any question or concerns you may have.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "David Stewart".

David Stewart, P.E., BCEE  
Director of Engineering  
Capital Region Water

cc: Michael Doweary, CRW  
Claire Maulhardt, P.L.A., CRW  
Steven Hann, Esq.  
John Aldrich, P.E., D.WRE, CDM Smith

**Attachments:**

- Attachment Table 1: *CRW Capital Improvement Projects for the AWTF*
- Attachment Table 2: *Capital Improvement Projects for the CRW Conveyance System*
- Attachment Table 3: *GSI Projects for the CRW Collection System* (Tables 1 through 3 are referenced within Cover Letter Responses 6)
- Attachment Table 4: *Rehabilitation, Separation, Storage Projects for the CRW Collection System* (Tables 1 through 4 are referenced within Cover Letter Responses 4 and 8 and Responses 10 and 32a)
- Attachment Table 5: *Systemwide and Local Control Strategy Cost Performance Comparison* (referenced within Cover Letter Response 2 and Response 23)
- Attachment Figure 1: *CRW's CSO Warning Signs* (referenced within Response 2)





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- Attachment Figure 2: Additional Cost Breakdown for Systemwide Control Strategy 2 - Deep Tunnel Storage/Conveyance, Control Point 2 (referenced within Response 23)
- Attachment Figure 3: Additional Cost Breakdown for Systemwide Control Strategy 2 - Deep Tunnel Storage/Conveyance, Control Point 3 (referenced within Response 23)
- Attachment Figure 4: Additional Cost Breakdown for Uptown Satellite Storage/Treatment - CBH23OPP Figures 8.4.3-3 and 8.4.3-4 (referenced within Response 23)
- Attachment Figure 5: Spring Creek Pump Station Typical Year Peak Flow Event Hydrograph (referenced within Response 26f)

## Attachments

- Attachment Table 1: *CRW Capital Improvement Projects for the AWTF*
- Attachment Table 2: *Capital Improvement Projects for the CRW Conveyance System*
- Attachment Table 3: *GSI Projects for the CRW Collection System* (Tables 1 through 3 are referenced within Cover Letter Responses 6)
- Attachment Table 4: *Rehabilitation, Separation, Storage Projects for the CRW Collection System* (Tables 1 through 4 are referenced within Cover Letter Responses 4 and 8 and Responses 10 and 32a)
- Attachment Table 5: *Systemwide and Local Control Strategy Cost Performance Comparison* (referenced within Cover Letter Response 2 and Response 23)
- Attachment Figure 1: *CRW's CSO Warning Signs* (referenced within Response 2)
- Attachment Figure 2: Additional Cost Breakdown for Systemwide Control Strategy 2 - Deep Tunnel Storage/Conveyance, Control Point 2 (referenced within Response 23)
- Attachment Figure 3: Additional Cost Breakdown for Systemwide Control Strategy 2 - Deep Tunnel Storage/Conveyance, Control Point 3 (referenced within Response 23)
- Attachment Figure 4: Additional Cost Breakdown for Uptown Satellite Storage/Treatment - CBH23OPP Figures 8.4.3-3 and 8.4.3-4 (referenced within Response 23)
- Attachment Figure 5: Spring Creek Pump Station Typical Year Peak Flow Event Hydrograph (referenced within Response 26f)

**Attachment Table 1: CRW Capital Improvement Projects for the AWTF\***

| Project Name                                 | Project Objectives   | Estimated Construction Cost | Projected Project Completion | Wet Weather Control Benefits   |
|--|--|-----------------------------|------------------------------|--|
| Headworks Screening                          | <ul style="list-style-type: none"> <li>Install mechanically cleaned fine screening</li> </ul>  | \$3.6M                      | Q4 2018                      | Increases hydraulic capacity to 80 MGD, with additional 40 MGD backup capacity.  |
| Primary Digester Rehabilitation              | <ul style="list-style-type: none"> <li>Replace digester covers and mixing systems, associated piping and valves</li> <li>Replace electrical controls and switchgear</li> <li>Clean and insulate digester tanks</li> </ul>  | \$8.2M                      | Q1 2020                      | Restore and maximize biosolids digestion capacity<br>Improve overall AWTF operational efficiency<br>Maximize digester gas production potential   |
| Primary Clarifier Improvements/Repair        | <ul style="list-style-type: none"> <li>Replace clarifier sludge collection drives, chains, flights, pumps, and associated piping and valves</li> <li>Install additional baffles to reduce short circuiting and re-suspension of settled solids.</li> <li>Repair/rehabilitate concrete structure</li> </ul> | \$6M                        | Q4 2020                      | Increase hydraulic capacity to 80 MGD<br>Improved wet weather operations allows more efficient use of chemically-enhanced settling.<br>Improves settling/reduces re-suspension in clarifiers at 80 MGD hydraulic capacity. |
| Combined Heat & Power System Rehabilitation  | <ul style="list-style-type: none"> <li>Replace combined heat and power system, which is beyond its useful life</li> </ul>  | \$10M                       | Q4 2020                      | Restore operational efficiency to digester gas cogeneration and heating system.  |
| Additional Solids Process Rehab/Improvements | <ul style="list-style-type: none"> <li>Equalization/ pretreatment for high strength waste</li> <li>Secondary Digesters – clean, rehab, cover replacement</li> </ul>  | \$5M                        | Q4 2022                      | Restore operational efficiency to solids processes   |

*\*Numerous minor capital improvements are also made annually to maintain operational efficiency. Examples include pump replacement, repair to critical plant components (i.e., cogeneration and cryogenic oxygen generation systems)*

**Attachment Table 2: Capital Improvement Projects for the CRW Conveyance System**

| Project Name                                | Project Objectives   | Estimated Construction Cost      | Projected Project Completion | Wet Weather Control Benefits   |
|---|--|----------------------------------|------------------------------|--|
| Paxton Creek Interceptor Rehabilitation     | <ul style="list-style-type: none"> <li>Restore structural integrity of 13,500 ft. pipe.</li> </ul>   | \$20M                            | 3Q 2020                      | Strengthened pipe allows operation under surcharge, enabling realization of full hydraulic capacity.   |
| Asylum Run Interceptor Rehabilitation       | <ul style="list-style-type: none"> <li>Restore structural integrity of 2,500 ft. pipe.</li> </ul>  | \$1.2M                           | 4Q 2018                      | Strengthened pipe allows operation under surcharge, enabling realization of full hydraulic capacity.   |
| Front St. Interceptor Rehabilitation, Ph. 1 | <ul style="list-style-type: none"> <li>Restore structural integrity of 2,000 ft. pipe.</li> </ul>  | \$0.6M                           | 4Q 2018                      | Strengthened pipe allows operation under surcharge, enabling realization of full hydraulic capacity.   |
| Front St. Pump Station                      | <ul style="list-style-type: none"> <li>Complete Pump Station Rehabilitation</li> <li>Replace pumps, screens and all associated operating equipment</li> </ul>                            | \$12M                            | 2Q 2020                      | New pumps increase hydraulic capacity from 40 to 60 MGD,   |
| Front St. Interceptor Rehabilitation, Ph. 2 | <ul style="list-style-type: none"> <li>Restore structural integrity of 10,600 ft. pipe</li> </ul>  | \$9M                             | 4Q 2020                      | Strengthened pipe allows operation under surcharge, enabling realization of full hydraulic capacity.   |
| Spring Creek Interceptor Rehabilitation     | <ul style="list-style-type: none"> <li>Restore structural integrity of 5,100 ft. pipe.</li> </ul>  | Joint project with Suburbs - tbd | 4Q 2022                      | Strengthened pipe allows operation under surcharge, enabling realization of full hydraulic capacity.   |
| Spring Creek Pump Station                   | <ul style="list-style-type: none"> <li>Replace Spring Creek P.S. most likely on a new site, co-located with a storage facility</li> </ul>  | \$7.5M                           | 4Q 2022                      | New pumps increase hydraulic capacity from 18 to 30 MGD, increasing typical year CSO capture from 53% to 78%.  |
| CSO Regulator Enhancements                  | <ul style="list-style-type: none"> <li>Modify exist control orifices to maximize wet weather capture</li> <li>Restore flap gates and outfall pipes to prevent river intrusion</li> </ul> | \$2.5M                           | 4Q 2021                      | Increases conveyance to interceptor, prevents backflow from interceptor in surcharge conditions, and reduces river intrusion, increasing typical year CSO capture from 53% to 78%. |

**Attachment Table 3: Green Stormwater Infrastructure Projects for the CRW Collection System**

| Project Name  | Project Objectives   | Estimated Construction Cost | Projected Project Completion | Wet Weather Control Benefits  |
|---|--|-----------------------------|------------------------------|---|
| Third St. Multi-Modal GSI                                 | <ul style="list-style-type: none"> <li>Early action GSI demonstration project within ROW.</li> <li>Multiple rain gardens and tree trenches.</li> </ul>   | \$2.8M                      | Q3 2019                      | <i>Wet Weather Control Benefit quantification is not finalized.</i>   |
| Parks GSI – Cloverly Heights                              | <ul style="list-style-type: none"> <li>Demonstration porous asphalt basketball court with subsurface storage (lined – Karst)</li> <li>Rain garden demonstration with small pretreatment rain garden</li> </ul>   | \$0.4M                      | Q3 2018                      | <ul style="list-style-type: none"> <li>Reduce peak flows of runoff from park and surrounding neighborhood in a separate-sewered area of the City</li> </ul> |
| Parks GSI – Royal Terrace                                 | <ul style="list-style-type: none"> <li>Early action GSI demonstration project within City Park</li> <li>Demonstration porous asphalt basketball court with subsurface storage and infiltration system</li> </ul>   | \$0.3M                      | Q3 2018                      | Managing runoff from 34,500 square feet drainage area. System was designed to provide 0.88 ac-in of storage below the overflow.                             |
| Parks GSI – Penn & Sayford                                | <ul style="list-style-type: none"> <li>Early action GSI demonstration project within City Park</li> <li>Two rain gardens</li> </ul>  | \$0.1M                      | Q3 2018                      | Managing runoff from approximately 14,600 square feet drainage area. Total storage volume > 0.16 ac-in.   |
| Parks GSI – 4 <sup>th</sup> & Dauphin                     | <ul style="list-style-type: none"> <li>Early action GSI demonstration project within City Park</li> </ul>  | \$0.4M                      | Q4 2019                      | <i>Wet Weather Control Benefits are not finalized.</i>  |
| Summit Terrace Neighborhood GSI                           | <ul style="list-style-type: none"> <li>Early action GSI demonstration project remediating and repurposing vacant lots to manage stormwater and provide neighborhood amenities.</li> </ul>  | \$0.4M                      | Q3 2018                      | Manage 1.15 acres of existing impervious area resulting in approximately 950,000 gallons of stormwater capture per year.                                    |
| Camp Curtain Big Green Block GSI                          | <ul style="list-style-type: none"> <li>Early action GSI demonstration project in partnership with community and church.</li> </ul>   | \$2.1M                      | Q4 2019                      | <i>Wet Weather Control Benefits are not finalized.</i>  |
| MulDer Square GSI   | <ul style="list-style-type: none"> <li>Early action GSI demonstration project within ROW</li> </ul>  | \$1M                        | Q4 2019                      | <i>Wet Weather Control Benefits are not finalized.</i>  |
| South Allison Hill GSI                                    | <ul style="list-style-type: none"> <li>Early action GSI demonstration project within ROW</li> </ul>  | \$1.2M                      | Q4 2019                      | <i>Wet Weather Control Benefits are not finalized.</i>  |
| 2 <sup>nd</sup> St. / 7 <sup>th</sup> St. Multi-Modal GSI | <ul style="list-style-type: none"> <li>Early action GSI demonstration project within ROW</li> </ul>  | \$1M                        | Q4 2019                      | <i>Wet Weather Control Benefits are not finalized.</i>  |
| Paxton Creek Stream Restoration                           | <ul style="list-style-type: none"> <li>Stabilize Paxton Creek streambank, reducing sediment and nutrient loading.</li> </ul>   | \$0.3M                      | Ongoing (likely beyond 2023) | Regional project with Lower Paxton and Susquehanna Townships achieves full Paxton Creek TMDL and initial Chesapeake Bay TMDL load reductions.               |
| Stormwater Regulations                                    | <ul style="list-style-type: none"> <li>Implement wet weather fee and credit structure.</li> <li>Provide enhanced wet-weather performance standards for development projects.</li> <li>Support enforcement of pollution prevention mechanisms.</li> </ul> |                             | Ongoing                      | Provide a funding stream, incentives, requirements, and performance standards for proper wet weather management on property discharging to CRW's system.    |

**Attachment Table 4: Rehabilitation, Separation, Storage Projects for the CRW Collection System**

| Project Name   | Project Objectives   | Estimated Construction Cost                                   | Projected Project Completion                        | Wet Weather Control Benefits   |
|--|--|---|---|--|
| Priority System Cleaning and Televising Program                      | <ul style="list-style-type: none"> <li>Contracted service focusing on priority sections of CRW's system that are either impractical or inefficient to self-perform</li> <li>Expedite completion of cleaning and assessment of entire system</li> </ul> | \$250,000<br>\$250,000<br>\$250,000<br>\$250,000<br>\$250,000 | Q4 2018<br>Q4 2019<br>Q4 2020<br>Q4 2021<br>Q4 2022 | <ul style="list-style-type: none"> <li>System assessment and prioritization</li> <li>Identification of pipe (CSS, SS and MS4) for rehabilitation and replacement to prevent failures leading to DWOs and SSOs</li> </ul>   |
| Market Street Rehabilitation and Wet Weather Control                 | <ul style="list-style-type: none"> <li>Repair/replace collapsed sewer in Market St. (parallel 36-in brick lines)</li> <li>Rebuild/restore inlets</li> <li>Install decentralized green/grey stormwater controls</li> </ul>                              | \$1.3M<br><br>\$0.5M<br>\$1M                                  | Q4 2018<br><br>Q4 2019<br>Q4 2019                   | <ul style="list-style-type: none"> <li>Reduce DWOs at CSO-037 and basement backups along Market St.</li> <li>Control CSOs, basement backups, and flooding through use of GSI/restored inlets to manage stormwater at the source and reduce volumes/peaks entering CRWs system.</li> </ul>              |
| System-wide Pipe Rehabilitation and replacement                      | <ul style="list-style-type: none"> <li>Repair and replacement of failing pipe, manhole, inlet and associated infrastructure</li> </ul>   | \$1.4M<br>\$2.5M<br>\$2.5M<br>\$2.5M<br>\$2.5M                | Q4 2018<br>Q4 2019<br>Q4 2020<br>Q4 2021<br>Q4 2022 | <ul style="list-style-type: none"> <li></li> </ul>   |
| CSO-048 (Mish Run, Bellevue Park) Separation and Wet Weather Control | <ul style="list-style-type: none"> <li>Install decentralized green/grey stormwater controls.</li> <li>New separate trunk storm sewer to connect existing separate storm sewers to Paxton Creek.</li> </ul>   | \$18M**   | Q4 2022   | <ul style="list-style-type: none"> <li>Redirect 118 acres of separate storm sewers out of CSO 048 combined sewers, reducing 90 MG of CSO volume during typical year.</li> <li>Control peak flows/volumes to minimize trunk storm sewer size.</li> <li>Reduce stormwater pollution/ volumes.</li> </ul> |

\*\* Cost of separation only. Does not include cost to attenuate and treat (\$60-\$100M additional)

**Attachment Table 5: Systemwide and Local Control Strategy Cost Performance Comparison**

| Alternative Strategy   | Level of Control |             |                           |             |            |                          |                           |             |
|--|------------------|-------------|---------------------------|-------------|------------|--------------------------|---------------------------|-------------|
|  | Existing         |             | Baseline                  |             | Affordable |                          | Presumptive               |             |
|  | Cost (\$M)       | Capture (%) | Cost <sup>1,2</sup> (\$M) | Capture (%) | Cost (\$M) | Capture <sup>3</sup> (%) | Cost <sup>1,2</sup> (\$M) | Capture (%) |
| Systemwide Control Strategy 1 - Increased Conveyance and Treatment       | \$0              | 53%         | \$115 - \$250             | 79%         | \$270      | 80-81%                   | \$350 - \$750             | 85%         |
| Systemwide Control Strategy 2 - Deep Tunnel Storage                      | \$0              | 53%         | \$115 - \$250             | 79%         | n/a        | n/a                      | n/a                       | n/a         |
| Local Control Strategy 1 - Decentralized Stormwater Management           | \$0              | 53%         | \$115 - \$250             | 79%         | \$270      | 80-81%                   | \$220 - \$470             | 85%         |
| Local Control Strategy 2 - Satellite Treatment and/or Storage Facilities | \$0              | 53%         | \$115 - \$250             | 79%         | \$270      | 82-83%                   | \$190 - \$400             | 85%         |
| Local Control Strategy 3 - Sewer Separation                              | \$0              | 53%         | \$115 - \$250             | 79%         | \$270      | 80-81%                   | \$420 - \$900             | 85%         |

<sup>1</sup> – Total Probable Cost, Present Value of Capital and Operations & Maintenance Costs

<sup>2</sup> – Total Probable Cost range for planning is +50%/-30%

<sup>3</sup> – Approximate Percent Combined Sewer System Capture near the Affordable Level of Control

Attachment Figure 1: CRW's CSO Warning Signs

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# WARNING

## PRECAUCIÓN

### COMBINED SEWER OVERFLOW AREA

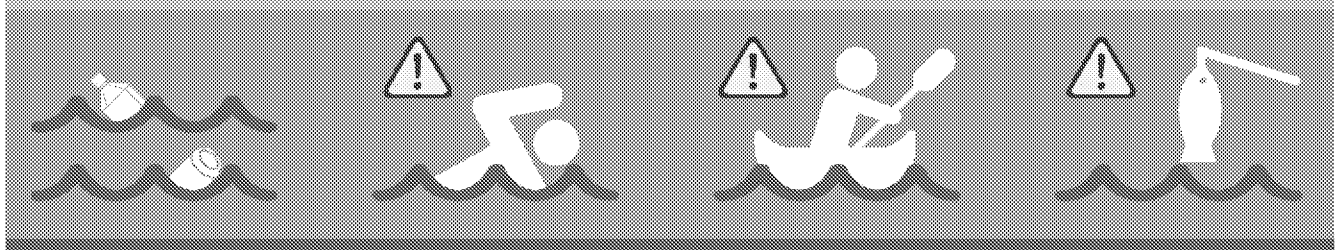
DESBORDAMIENTO DEL SISTEMA DE ALCANTARILLADO COMBINADO AREA

**RAINWATER MIXED WITH UNTREATED SEWAGE CONTAINING HARMFUL BACTERIA MAY DISCHARGE DURING AND FOLLOWING RAINFALL EVENTS.**

EL AGUA DE LLUVIA MEZCLADA CON AGUAS RESIDUALES NO TRATADAS QUE CONTIENEN BACTERIAS DANINAS PUEDE DESCARGARSE DURANTE Y DESPUÉS DE LOS EVENTOS DE LLUVIA.

**AVOID CONTACT WITH WATER DURING AND FOLLOWING RAINFALL EVENTS**

EVITE EL CONTACTO CON EL AGUA DURANTE Y DESPUÉS DE LAS PRECIPITACIONES PLUVIALES



Learn More / Aprenda Más @ [CapitalRegionWater.com/cbh2o](http://CapitalRegionWater.com/cbh2o)



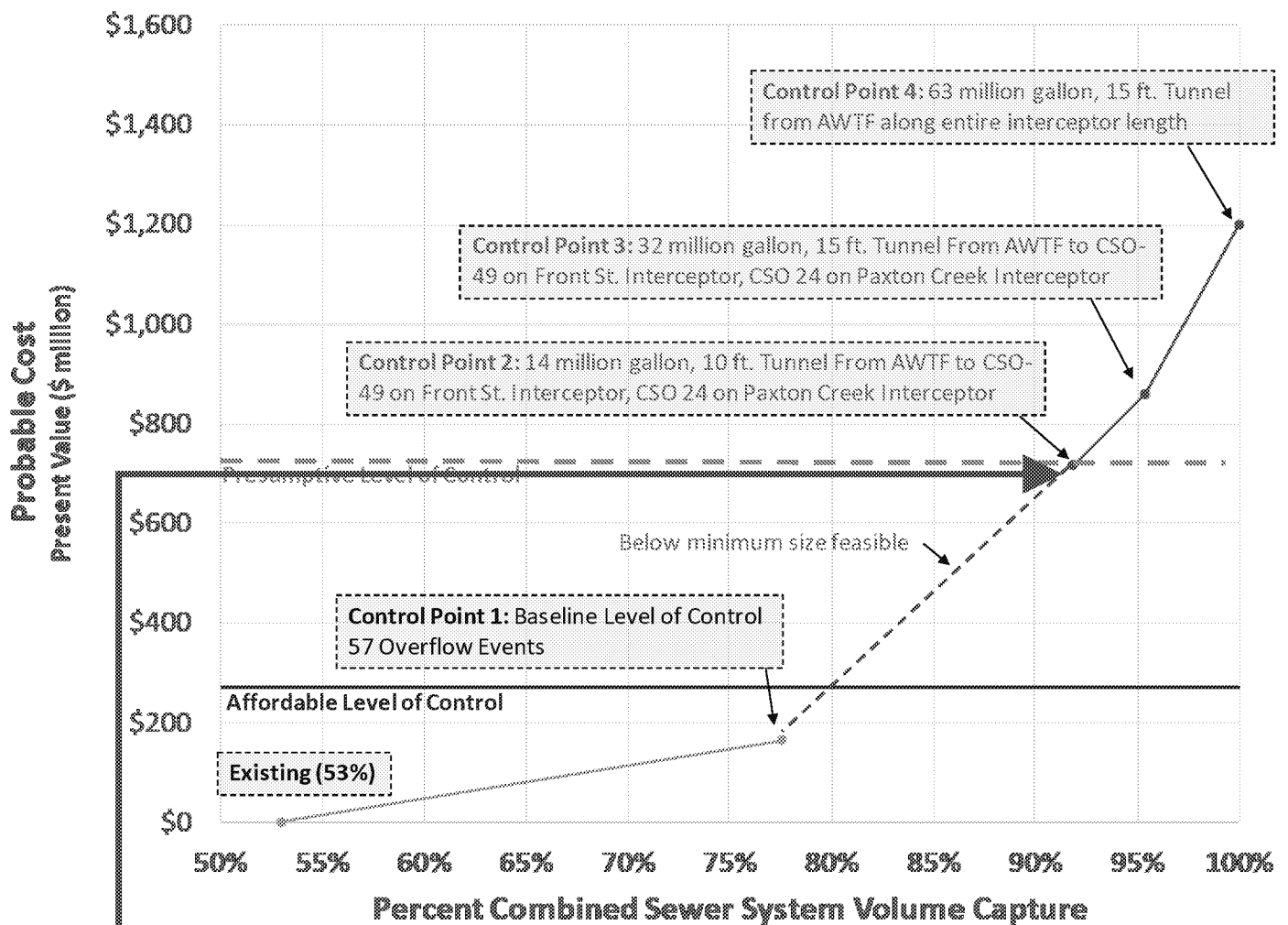
*Call 888-510-0606 to check on the status of combined sewer overflows.  
Llame al 888-510-0606 para verificar el estado de los desbordamientos combinados de alcantarillas.*

*If you see an overflow during dry weather, please call Capital Region Water 888-510-0606  
Si es testigo de un desbordamiento durante la temporada de sequía, repórtelo por favor a Capital Region Water 888-510-0606*





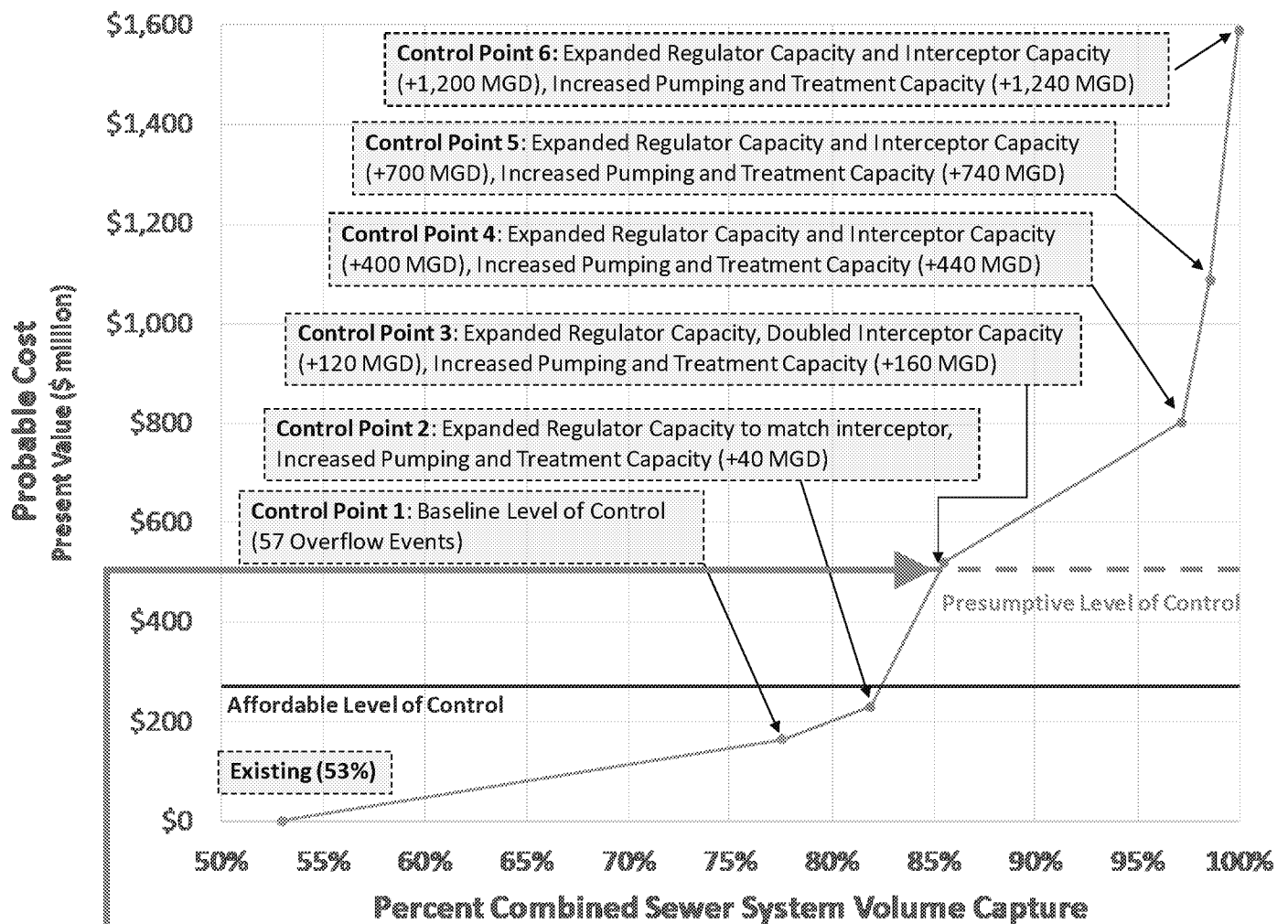
**Attachment Figure 2: Additional Cost Breakdown for Systemwide Control Strategy 2**  
**Deep Tunnel Storage/Conveyance, Control Point 2**



**Control Point 2 Probable Cost Includes:**

- \$165 million of Baseline Improvements
- \$552 million for Tunnel System:
  - \$260M - 30,000 feet, 10 feet diameter tunnel
  - \$260M – Secondary structures – 21,000 feet of consolidation sewers and 8 dropshafts
  - \$32M - 14 MGD Dewatering Pump Station
- **\$717 million total Probable Cost**

**Attachment Figure 3: Additional Cost Breakdown for Systemwide Control Strategy 2**  
**Deep Tunnel Storage/Conveyance, Control Point 3**

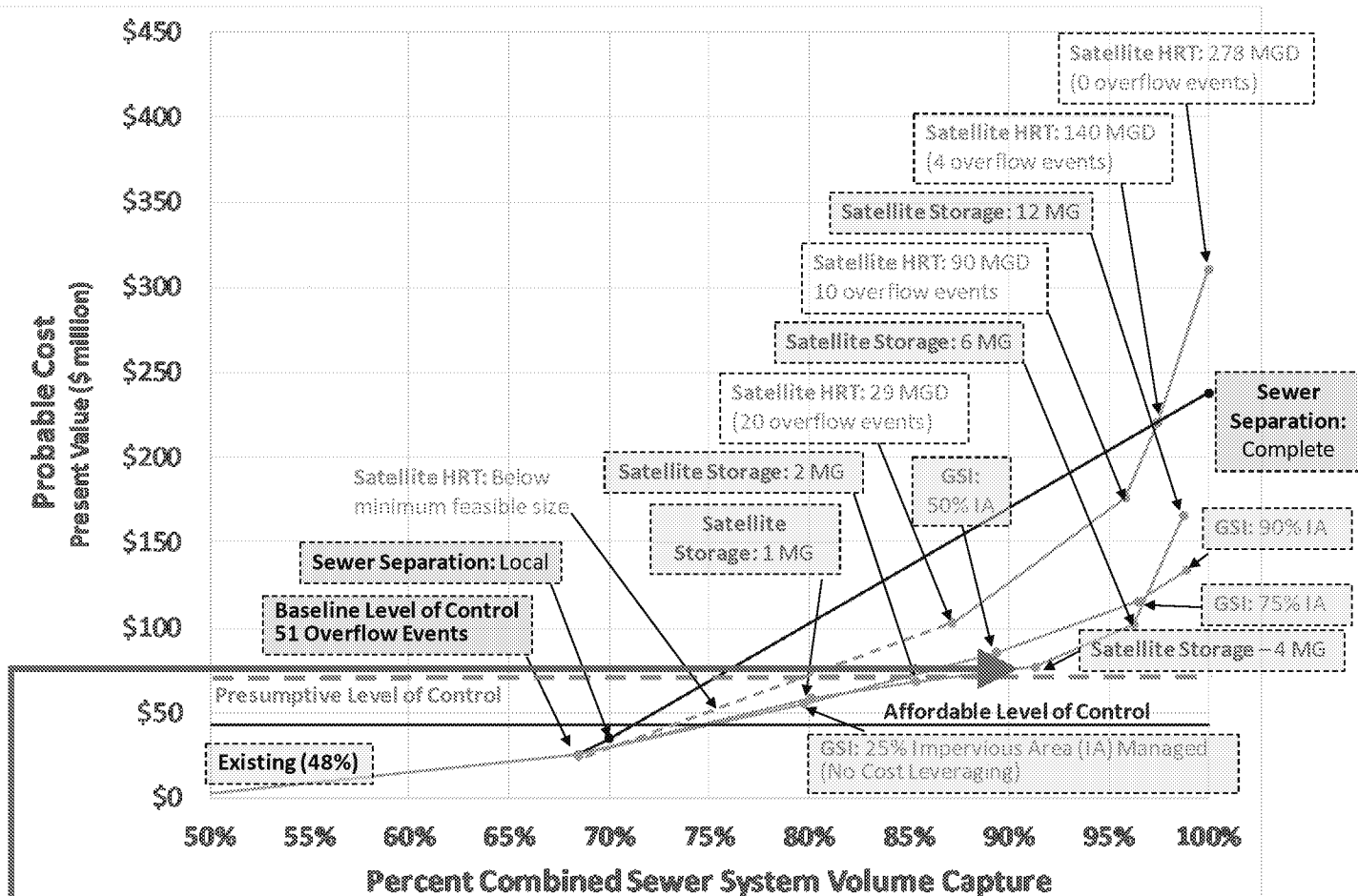


**Control Point 3 Probable Cost Includes:**

- \$165 million of Baseline Improvements
- \$362 million for Expanded Conveyance/Treatment System:
  - \$229M – new regulator connections and second interceptor system
  - \$87M – expanded pump stations – 120 MGD
  - \$46M – 160 MGD Wet Weather Treatment
- **\$527 million total Probable Cost**

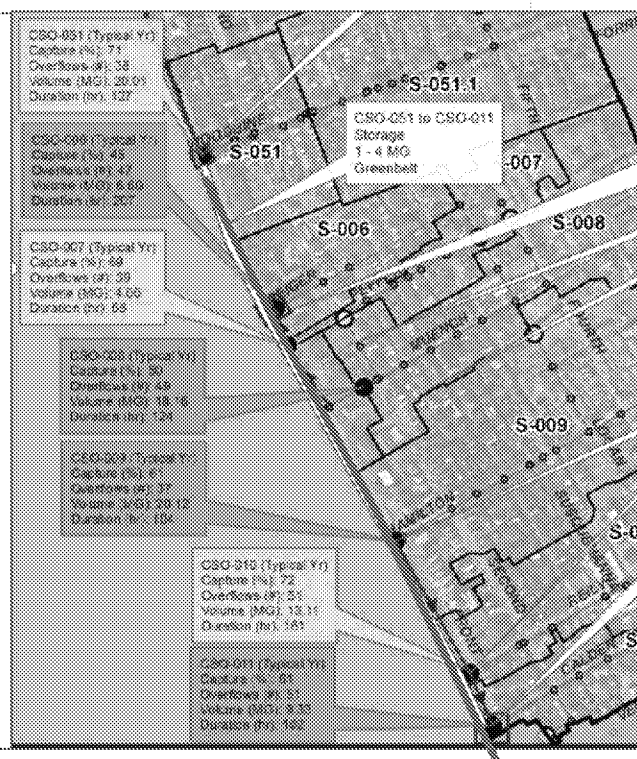
Attachment Figure 4: Additional Cost Breakdown for Uptown Satellite Storage/Treatment

CBH23OPP Figures 8.4.3-3 and 8.4.3-4

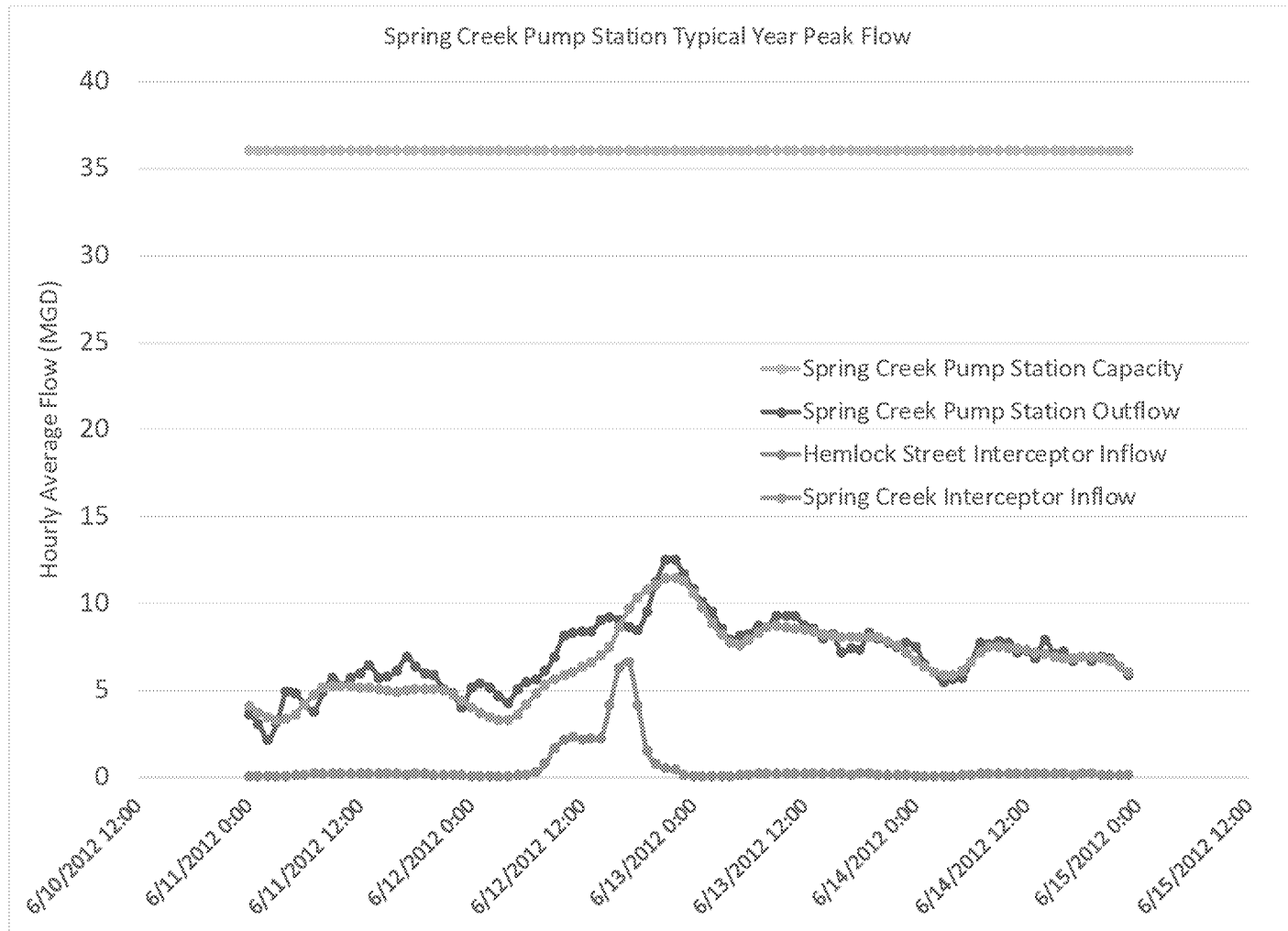


### Uptown Planning Area Satellite Storage 4 MG Probable Cost Includes:

- \$25 million of Baseline Improvements
- \$52 million for Satellite Storage 4 MG :
  - \$50.5M – 2,150 ft long, 12 ft by 12 ft box storage conduit parallel to Susqueanna River / Front Street Interceptor below Greenbelt
  - \$1.5M – 4 MGD dewatering pump station
- **\$77 million total Probable Cost**



Attachment Figure 5: Spring Creek Pump Station Typical Year Peak Flow Event Hydrograph



# Exhibit L



November 27, 2019

Chief, Environmental Enforcement Section  
Environment and Natural Resources Division  
U.S. Department of Justice  
601 D Street NW  
Washington, D.C. 20004  
Re: DOJ No. 90-5-1-1-10157

Pamela J. Lazos  
Senior Assistant Regional Counsel  
Office of Regional Counsel (3RC20)  
U.S. Environmental Protection Agency, Region 3  
1650 Arch St.  
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Chief  
NPDES Enforcement Branch (3WP42)  
Water Protection Division  
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Program Manager – Clean Water Program  
Department of Environmental Protection  
South Central Regional Office  
909 Elmerton Avenue  
Harrisburg, PA 17110-8200

RE: Civil Action No. 1:15-cv-00291-WWC: City Beautiful H<sub>2</sub>O Program Plan –Response to PG  
Environmental CBH<sub>2</sub>OPP Costs Review

To Plaintiffs, Civil Action No. 1:15-cv-00291-WWC:

PG Environmental has provided review comments dated 11/18/19 to USEPA on Capital Region Water's (CRW) City Beautiful H<sub>2</sub>O Program Plan (CBH<sub>2</sub>OPP) regarding Appendix B, Basis of Cost Opinions. The following documents CRW's responses to these comments.

**Introductory Comments:**

**Introductory Comment 1:**

*PG was tasked by USEPA to review elements of the City Beautiful H<sub>2</sub>O Program Plan dated March 29, 2018 prepared by Capital Region Water (H<sub>2</sub>O Plan). PG has performed an initial review of Appendix B of the H<sub>2</sub>O Plan, which presents CRW's cost-estimating methodology used for that Plan. PG focused this initial review on the primary components of CRW's favored "Localized Control Strategy" as discussed in Section 8.4 of the H<sub>2</sub>O Plan - GI measures, collection system rehabilitation, sewer separation, and remote storage. On an overall basis, it appears that costs for many key project components have been grossly exaggerated. This cost difference seems to be largely due to the out-of-date base construction cost information that was used.*



*The majority of H<sub>2</sub>O Plan base cost information dates from 2003 to 2008 and some information goes back as far as 1979. As expressed at the recent meeting with CRW, PG's initial concern was that the GI cost data may be obsolete since it dates from 2006>2007. But when PG escalated this older GI cost data to 2017, the resultant project unit costs compared favorably to current GI cost data. However, CRW's sewer CIPP lining costs and sewer separation costs appear to be double or even more above current construction costs. Also, it does not appear that CRW evaluated on-street storage for combined sewer flowrate attenuation in residential areas having relatively flat topography, which may well be extremely cost-effective. These cost deficiencies may materially affect CRW's overall program implementation cost and compliance schedule. Following are PG's initial conclusions and recommendations for additional cost information from CRW:*

### **Introductory Response 1:**

The general tone of the introductory comment highlights some misunderstandings of the costs utilized for specific technologies. CRW provides responses to the specific comments below and thinks these should provide documentation to clarify basis of cost opinion assumptions.

### **General Comments:**

#### **General Comment 1:**

*Table 1.4.5-1: "Summary of Base Index Values for Technologies Cost Data" presents the ENRCCI and RSMeans location factors utilized for the various CRW CSO abatement component estimates included in Appendix B. The cost tables presented in Appendix B are referenced to Engineering News – Record Construction Cost Indices (ENRCCI) for a variety of years rather than for a single year as shown in Appendix B Table 1.4.5-1. Based upon the ENRCCI values listed, the majority of cost tables appear to be based upon construction cost data from October 2003 (ENRCCI 6771) to December 2008 (ENRCCI 8551). Some base costs actually date back to 1979, 1988 and 1993 as noted in the specific PG comments following. Further, these costs utilize an equally broad mix of RSMeans location factors ranging from 92.8 to 115.2 adjust the cost data from other areas to Harrisburg. The RSMeans location factor for construction in Harrisburg in 2017 is 96.8%. Appendix B paragraph 1.4.5 also states: "The base ENRCCI is 10338 and RSMeans factor is 99.8." It is not clear how the various ENRCCI values and RSMeans location factors presented in Table 1.4.5-1 have been utilized to develop the project cost estimates presented by CRW.*

#### **General Response 1:**

All costs presented in the Plan are based on the stated ENRCCI and RS Means factors or are utilized from other CRW planning or design analyses. For costs developed using data in



Appendix B, the original unit cost is adjusted to a location specific and current unit cost by adjusting with the Harrisburg RS Means factor and current ENRCCI as follows:

$$\text{Base unit cost} \times (\text{Harrisburg RS Means} / \text{Base RS Means}) \times (\text{Current ENRCCI} / \text{Base ENRCCI}) = \text{Current Unit Cost}$$

### Specific Comments:

#### Specific Comment 1:

**SECTION 2.1 Non-Construction Costs:** *This Appendix B Section presents the various contingency percentages that CRW applied to convert construction cost estimates to total project cost estimates. The overall contingency amount derived from the following factors is 80%, which is at the high end of the customary range for such factors, but probably appropriate considering the current status of CRW's collection system investigations and evaluations.*

- *Section 2.1.1: Construction contingency: 25%*
- *Section 2.1.2: Project contingency: 20%*
- *Section 2.1.5: Engineering and implementation: 20%*
- *Section 2.1.6: Contractor's overhead, indirect costs, and profit: 24% (this contingency is applied to raw estimate line item costs to determine construction cost)*

*The calculation process thought to be used by CRW to develop its estimates from raw cost data to project cost is: Raw Estimate Line Item Cost x 1.24 Contractor OH&P = Construction Cost. Construction Cost x 1.25 Construction Contingency x 1.2 Project Contingency x 1.2 Engineering = 1.8 x Construction Cost = Project Cost.*

#### Specific Response 1:

CRW agrees with PG's assessment of the calculation process for these cost factors and it confirms how it was applied in the Plan alternatives analysis.

#### Specific Comment 2:

**SECTION 2.3.1 Green Stormwater Infrastructure:** *PG has not yet reviewed the individual cost data line items presented Table 2.3.1-1: "Example of Project Cost Estimate based on Quantities and Unit Costs", but these costs appear reasonable on an overall basis. PG did review the cost data presented in Table 2.3.1-4: "Summary of Direct Construction Cost Estimates" in greater depth. Although this cost information apparently dates from 2006 (yearly average ENRCCI 7966), PG found that the various unit prices when adjusted to 2017 construction and Harrisburg location are relatively consistent with planning level unit prices PG has encountered for other CSO and SSO abatement programs that it has*





*reviewed. Appendix B provides a second table of GI unit costs, Table 2.3.1-6: "Summary Statistics of Direct Construction Cost Estimates with Improved Development Practices and Economies of Scale in 2008 Dollars" that presents a series of GI measure unit costs that are approximately 20% lower than the unit prices presented in Table 2.3.1-4. It is not clear how the unit prices from Tables 2.3.1-4 and 2.3.1-6 have been utilized to develop the project cost estimates presented by CRW.*

### **Specific Response 2:**

The summary of Green Stormwater Infrastructure unit costs is based on the Philadelphia LTCPU cost appendix and more recent cost analyses. Page 20 of the Appendix states CRW's selection of unit cost for decentralized and green stormwater infrastructure alternatives:

*For the purposes of the City Beautiful H<sub>2</sub>O Program Plan, green stormwater infrastructure costs assumptions were updated based on more recent cost investigations. Philadelphia Water Department prepared the 2016 Pilot Program Report and included an evaluation of construction and maintenance costs for green stormwater infrastructure. The median construction cost derived from the analysis and adjusted to Harrisburg for 2016 equals \$316,000 per impervious acre managed for all project types. For the purposes of the development of cost opinions for the City Beautiful H<sub>2</sub>O Program Plan construction and project contingencies are included in this value. Green stormwater maintenance cost analysis from the PWD Pilot Report found a cost of \$8,000 per impervious acre managed for all project types.*

CRW utilized this unit cost as it based on a range of green stormwater infrastructure techniques with a primary focus on right-of-way implemented features. It is also notable that the green stormwater infrastructure maintenance cost assessment from the PWD Pilot Report includes a signification amount of repair and replacement costs associated with correcting design and construction deficiencies of early period of new asset implementation program. These two factors (focus on street-based practices and O&M cost including some repair and replacement costs) may provide a conservative estimate of the cost to implement green stormwater infrastructure.

### **Specific Comment 3:**

**SECTION 2.3.1 Life-Cycle Assumptions:** *The service lives of GI improvements are critically dependent upon the periodic maintenance performed to keep these improvements at their design performance targets. Table 2.3.1-15: "Life Cycle Assumptions" presents the lifespan assumptions that CRW has apparently used as the bases for its GI life-cycle costs. Some of these assumptions appear to be exaggerated, which will cause long-term GI costs to be underestimated. Following is a comparison of CRW's versus PG's estimates of the lifespans of individual GI measures between major renovation cycles. PG's estimates are based upon PG research and the assumption that long-term maintenance will be less than optimal:*



**Table 2.3.1-15: Life Cycle Assumptions**

| Control                 | CRW Lifespan (years)    | PG Lifespan between Major Renovation Cycles (years) |
|-------------------------|-------------------------|---|
| Bioretention            | 25 <sup>1</sup>         | 10 to 15  |
| Green Roofs             | 25 to 30 <sup>1,2</sup> | 10 to 20  |
| Subsurface Infiltration | 25 <sup>1</sup>         | 10 to 15  |
| Porous Pavement         | 25 <sup>1</sup>         | Asphalt<br>7 to 15                                  |
|                         |                         | Paver Blocks<br>10 to 20                            |
| Street Trees            | 25 to 40 <sup>1,2</sup> | 25 to 40  |

<sup>1</sup>Note: Econ Northwest, 2007

<sup>2</sup> Note: internal communications

### Specific Response 3:

Green stormwater infrastructure lifespan estimates provided in Appendix B assume regular and consistent maintenance. Two large scale urban stormwater management programs have many installations that are at or exceeding the life cycle estimates provided by PG. Both Portland, Oregon and Philadelphia have large scale programs that are supported by a fully developed maintenance program. CRW plans to develop and staff a similar operations and maintenance program to ensure the continued function and operation of their decentralized stormwater management features. That programming is underway with the operation and maintenance of the first two years of CRW GSI construction (2018 and 2019). Further, as discussed in Specific Response 2, the operations and maintenance cost utilized should be an appropriate estimate for the long-term function of the stormwater management practices. CRW will continue to investigate GSI lifespan and performance with additional communities that have more mature programs (Lancaster, PA, Syracuse, NY, etc.) and will adjust life cycle cost expectations accordingly.

If required, CRW can compute the GSI life cycle cost impact of incorporating PG's lifespan assumptions, recognizing the outcome would be increase of the total program costs.

### Specific Comment 4:

**SECTION 2.3.2 Municipal Inflow and Infiltration Reduction:** PG reviewed the unit prices for cured-in-place sewer pipe lining presented in Table 2.3.2-1: "Municipal Pipe Lining Unit Costs" and found



*these costs to be grossly overestimated compared to similar work as documented in recent project bid tabulations obtained by PG via Internet from a diverse group of twenty municipalities across the United States as shown in the following:*

| Table 2.3.2-1: Municipal Pipe Lining Construction Unit Costs |  | Projection of CRW Unit Construction & Project Costs to 2017 Vs PG Project Unit Costs in 2017                              |   |  |
|--|--|---|---|--|
| Diameter (in)  | 2008 CRW CIPP Pipe Lining Unit CONSTRUCTION COST (\$/LF) | 2017 CRW CIPP Pipe Lining Unit CONSTRUCTION COST (\$/LF)  | 2017 CRW CIPP Pipe Lining Unit PROJECT COST (\$/LF) | 2017 PG CIPP Pipe Lining Unit PROJECT COST (\$/LF) |
|  | ENRCCI: 8551<br>Location Factor: 100<br>Contingency 0%   | ENRCCI: 10737 (average for 2017)<br>RSMEANS Harrisburg Location Factor: 96.8<br>Overall CRW Project Cost Contingency: 80% |   |  |
| 8  | \$137  | \$167   | \$300   | \$49   |
| 10   | \$159  | \$193   | \$348   | \$68   |
| 12   | \$199  | \$242   | \$435   | \$91   |
| 15   | \$258  | \$314   | \$564   | \$129  |
| 18   | \$280  | \$340   | \$613   | \$171  |
| 21   | \$318  | \$387   | \$696   | \$217  |
| 24   | \$395  | \$480   | \$864   | \$267  |
| 27   | \$476  | \$579   | \$1,041   | \$321  |
| 30   | \$572  | \$695   | \$1,251   | \$378  |
| 36   | \$706  | \$858   | \$1,545   | \$502  |
| 42   | \$846  | \$1,028   | \$1,851   | \$638  |
| 48   | \$985  | \$1,197   | \$2,155   | \$785  |

*As shown in the preceding table, PG's project unit costs for CIPP lining of the most common sewer sizes – 8-inch through 12-inch – are less than 20% of CRW's project costs. PG's project unit costs for lining larger pipes are less than 35% of CRW's project unit costs. These cost discrepancies potentially have a huge impact on CRW's overall collection system renovation program that it proposes to conduct in the first ten years of its CSO reduction program.*



*Table 2.3.2-2: "Municipal Pipe Lining Costs" presents the unit construction costs and unit project costs for common wastewater collection system appurtenances.*

| Table 2.3.2-2: Municipal Pipe Lining Unit Costs   |   |   |                                    |  |
|---|---|---|------------------------------------|--|
| Technology  | 2008 CRW Unit CONSTRUCTION COST (\$/LF) | 2017 CRW Unit CONSTRUCTION COST (\$/LF) | 2017 CRW Unit PROJECT COST (\$/LF) | 2017 PG Unit PROJECT COST (\$/LF)      |
| Manhole Rehabilitation - per Manhole              | \$2500                                  | \$3,039                                 | \$5,470                            | Cementous or Epoxy Lining 10Ft Deep MH |
|   |   |   |                                    | \$2,000 to \$4,000                     |
|   |   |   |                                    | Replacement 4-Ft Dia X 10- Ft Deep MH  |
|   |   |   |                                    | \$7,000 to \$8,000                     |
| Catch Basin Rehabilitation - per Catch Basin      | \$600                                   | \$729                                   | \$1,313                            | Rehabilitation                         |
|   |   |   |                                    | \$1,000 to \$2,000                     |
|   |   |   |                                    | Replacement                            |
|   |   |   |                                    | \$4,000 to \$5,000                     |
| Service Lateral Pipe Repair - per foot of Lateral | \$350                                   | \$425                                   | \$766                              | \$300 to \$400                         |

*As shown above, the overall implementation costs of specific projects will be dependent upon the mix of rehabilitation versus replacement of these appurtenances. Considering the status of CRW's collection system investigations and remediation analyses, the CRW construction and project unit prices for sewer appurtenance renovation presented in Table 2.3.2-2 appear reasonable.*

*Table 2.3.3-1: "Private I/I Removal Unit Costs" presents the construction costs for correcting I/I-contributing defects on private property. Updating these unit cost to 2017, raises them 25%, which appears reasonable. However, these costs should NOT be subject to the overall contingency of 80% that CRW appears to have applied to other public sector improvement construction. CRW's efforts regarding elimination of these I/I sources involves notification to property owners and verification that corrections have been made. Therefore, the overall contingency for correcting these I/I sources should not exceed 30% of the construction unit costs presented in Table 2.3.3-1.*



#### Specific Response 4:

The municipal pipe lining construction unit costs in Table 2.3.2-1 were **not** used in the development of collection system renewal cost estimates included in the CBH<sub>2</sub>OPP. Instead, a separate study was done to estimate collection system renewal costs, which was based on preliminary rapid assessment data and available CCTV inspection data. The following unit costs were used, which are based on CDM Smith's experience with numerous sewer rehabilitation projects. The CIPP unit costs used for the development of the CBH<sub>2</sub>OPP are reasonably close to those cited from PG experience.

| Diam. [in] | Light Clean/CCTV |          | CIPP  |          | Replace Pipe |          |
|------------|------------------|----------|-------|----------|--------------|----------|
|            | Cost             | Unit Qty | Cost  | Unit Qty | Cost         | Unit Qty |
| 6          | \$2.00           | LF       | \$55  | LF       | \$650        | LF       |
| 8          | \$2.25           | LF       | \$55  | LF       | \$700        | LF       |
| 10         | \$2.50           | LF       | \$60  | LF       | \$725        | LF       |
| 12         | \$2.75           | LF       | \$70  | LF       | \$750        | LF       |
| 15         | \$3.00           | LF       | \$85  | LF       | \$775        | LF       |
| 18         | \$3.50           | LF       | \$125 | LF       | \$825        | LF       |
| 21         | \$4.00           | LF       | \$200 | LF       | \$950        | LF       |
| 24         | \$4.50           | LF       | \$250 | LF       | \$1,050      | LF       |
| 27         | \$5.00           | LF       | \$300 | LF       | \$1,125      | LF       |
| 30         | \$5.75           | LF       | \$350 | LF       | \$1,200      | LF       |
| 36         | \$6.50           | LF       | \$400 | LF       | \$1,350      | LF       |
| 42         | \$7.25           | LF       | \$450 | LF       | \$1,550      | LF       |
| 48         | \$8.00           | LF       | \$500 | LF       | \$1,850      | LF       |
| 54         | \$9.00           | LF       | \$550 | LF       | \$2,050      | LF       |
| 60         | \$10.00          | LF       | \$600 | LF       | \$2,575      | LF       |
| 66         | \$11.00          | LF       | N/A   | LF       | \$2,800      | LF       |
| 72         | \$12.00          | LF       | N/A   | LF       | \$3,100      | LF       |
| 78         | \$13.25          | LF       | N/A   | LF       | \$3,400      | LF       |



| Manhole Recommendation    | Unit Cost |
|---------------------------|-----------|
| Clean Manhole             | \$500     |
| Adjust to Grade           | \$2,500   |
| Replace Frame/Cover       | \$1,000   |
| Chimney Seal              | \$500     |
| Cementitious Rehab        | \$2,500   |
| H <sub>2</sub> S Coating  | \$1,500   |
| Reconstruct Bench/Channel | \$1,000   |
| Manhole Replacement       | \$9,000   |

During the preparation of the CBH<sub>2</sub>OPP, limited CCTV inspection data were available so a contingency of 75% was utilized. Based on this preliminary analysis, collection system renewal costs were estimated to be \$95.3 million for the combined and separate sanitary systems, and an additional \$34.1 million for the separate stormwater system.

Note that since the submission of the CBH<sub>2</sub>OPP, additional CCTV inspection data suggests a greater proportion of the collection system may require rehabilitation/replacement, but these costs will continue to evolve until the entire collection system is televised and design projects are developed based on the inspection data. When system rehabilitation costs were updated and refined for the revised Financial Capability Assessment, more extensive CCTV information had become available and the contingency was reduced to 40%. However, the decreased contingency was offset by the increased restoration need identified by the CCTV data and the total rehabilitation cost remained substantially the same – indicating the initial 75% contingency was reasonable at the time.

#### **Specific Comment 5:**

**Section 2.3.4 Sewer Separation:** PG conducted an initial review of sewer separation costs presented in Table 2.3.4.1: “Sewer Separation Component Costs.” It appears that these costs are substantially inflated as shown in the following:

**Table 2.3.4-1: Sewer Separation Component Costs**

| Component  | 2008 CRW Unit<br>CONSTRUCTION<br>COST                                  | 2017 CRW Unit<br>CONSTRUCTION<br>COST  | 2017 CRW<br>Unit<br>PROJECT<br>COST | 2017 PG Unit<br>PROJECT COST   |
|--|--|--|-------------------------------------|--|
|  | ENRCCI: 8551<br>(December 2008)<br>Loc Factor: 115.2<br>Contingency 0% | ENRCCI: 10737<br>RSMEANS Harrisburg Location Factor: 96.8<br>Overall CRW Project Cost Contingency: 80% |                                     |  |
| New Sanitary Sewers<br>- \$/Mile - assume no<br>paving                     | \$1,700,000  | \$2,100,000  | \$3,780,000                         | \$2,000,000  |
| New Sanitary Sewers<br>- \$ /Foot - assume no<br>paving                    | \$320.00   | \$400  | \$720                               | \$390 (1)  |
| Lateral from new<br>sewer to property -<br>\$/Lateral                      | \$6,000  | \$7,500  | \$13,500                            | \$3,000 to \$5,000   |
| Interior plumbing<br>modifications -<br>Residential -Per Building          | \$6,000  | \$7,500  | \$13,500                            | Why would any<br>modifications be<br>necessary?                        |
| Interior plumbing<br>modifications - Non-<br>Residential - Per<br>Building | \$20,000   | \$25,000   | \$45,000                            | Eliminate internal<br>roof drains - \$0 to<br>\$50,000 per<br>building |
| Concrete Street Base -<br>\$/ SqFt   | \$6  | \$8  | \$14                                | \$10 to \$12   |
| Asphalt Paving - \$ /<br>SqFt  | \$3  | \$4  | \$7                                 | \$3 to \$5   |
| Concrete Sidewalk<br>- \$ /SqFt  | \$7  | \$9  | \$16                                | \$8 to \$10  |
| Concrete Curb - \$<br>/Foot  | \$26   | \$33   | \$59                                | \$40 to \$50   |

- (1) Based upon a sewer size mix of 75% 8-inch @ 8-foot depth, 10% 10-inch @ 8-foot depth, 5% 12-inch @ 10-foot depth, 4% 15-inch @ 12-foot depth, 3% 18-inch @ 12-foot depth, 2% 24-inch @ 14-foot depth, and 1% 36-inch @ 16-foot depth, all installed with granular backfill, but no surface paving, curbs or sidewalks.



*As shown in the preceding table, PG's project costs for sewer separation components are approximately 55% to 75% of CRW's project costs. PG has not yet reviewed the detailed construction unit price information in Appendix B Tables 2.3.5-1 through 2.3.5-14 that support the CRW unit construction costs presented in Table 2.3.4-1 above to identify the root causes of the CRW overestimates. These project unit cost discrepancies potentially have significant impact on CRW's selection of CSO mitigation measures, as well as overall program implementation costs and schedule.*

#### **Specific Response 5:**

The basis of the sewer separation cost breakdown was reviewed and there are some background assumptions that apply to the base sanitary sewer unit cost. The cost basis includes a 25% factor for potential of dual sanitary sewers buttressing either side of a combined sewer or on wide streets. Additionally, the sewer unit cost includes street restoration in the pit plane. It is also quite common to be required to provide temporary or permanent relocation of shallower utilities (drinking water, gas, steam, electric and communication utilities), when we have had to replace sections of our collection system. The specific cost is dependent on the level of involvement.

So, if the CRW project cost were to be reduced by these factors, the resulting project unit cost is near \$2,500,000 per mile, quite similar to the resulting base sanitary sewer unit cost derived by PG. However, these assumptions are relevant to Harrisburg conditions and the costs for sewer separation are therefore reasonable due to the mitigating factors described below.

There is significant cost and effort required to separate internal plumbing, as there is rarely a simple single point of connection for roof and floor stormwater drainage pipes to the sanitary lateral. There are also many sections throughout the City of Harrisburg served by "party line" sewers, in which groups of as few as two or three to more than twenty homes are served by a common lateral through backyards and alleys. Our experience is that these conditions considerably increase the complexity and cost of the separation process in historic cities like Harrisburg. We therefore consider the level of cost estimated for this approach appropriate.

CRW can also clarify the distribution of collection system by pipe diameter assumed in footnote (1). The actual distribution follows: 29% 8-inch @ 8.8-foot depth, 13% 10-inch @ 9.5-foot depth, 22% 12-inch @ 10.4-foot depth, 9% 15-inch @ 10.5-foot depth, 10% 18-inch @ 10.7-foot depth, 7% 24-inch @ 12.2-foot depth, and 10% 36-inch @ 12.7-foot depth

#### **Specific Comment 6:**

**SECTION 2.3.10 Tank Storage:** *PG generally concurs with underground cast-in-place concrete the tank construction cost equation presented: Tank Construction Cost = 3.48 x (Tank Capacity in MG) 0.826. This equation was tested for tank sizes between 2 MG and 20 MG. The*





*equation tends to somewhat under-predict project costs of tanks smaller than 4MG and somewhat over-predict project costs of tanks larger than 6MG, but appears adequate for project planning as shown in the following:*

| <b>Figure 2.3.10-1 Storage Tank Cost Curve</b> |   |  |   |
|--|---|--|---|
| <b>Tank Capacity<br/>(MG)</b>                  | <b>CRW 2008<br/>CONSTRUCTION COST<br/>(\$M)</b>       | <b>CRW 2017<br/>PROJECT COST<br/>(\$M)</b>   | <b>PG 2017<br/>PROJECT COST<br/>(\$M)</b> |
|  | <b>ENRCCI Dec 2008: 8551<br/>Location Factor: 100</b> | <b>ENRCCI 2017: 10737<br/>RSMeans Location Factor: 96.8<br/>Overall Project Contingency: 80%</b> |   |
| 2  | \$6.17  | \$7.75   | \$9.6                                     |
| 4  | \$10.94   | \$13.73  | \$13.8                                    |
| 6  | \$15.29   | \$19.20  | \$17.9                                    |
| 10   | \$23.31   | \$29.27  | \$25.1                                    |
| 15   | \$32.59   | \$40.92  | \$33.9                                    |
| 20   | \$41.33   | \$51.89  | \$42.4                                    |

*Exhibit B does NOT provide construction cost information for inline storage tanks, which are likely to be cost-effective for storage volumes of 1 MG or less nor does Exhibit B provide construction costs for on-street storage, which is likely to be cost-effective in residential areas having ground slopes of 1% or less.*

#### **Specific Response 6:**

CRW appreciates the cost comparison and verification of the storage tank cost curve.

On the second paragraph regarding the use of inline storage tanks, CRW utilized new pipe construction costs (open cut sewers and short-bore tunnel/trenchless) to prepare inline/linear storage elements, specifically, in the Uptown planning area alternatives analysis. Recent costs developed for the linear storage elements ranged from \$7 to \$18 million (depending on the size of the cross section) compared to the \$2 to \$4 million storage tank costs. These costs were for alternative in-line storage elements totaling from 4,000 to 8,000 feet long that were necessary to connect, convey and store flows along the narrow Front Street Interceptor system and provide a



reasonable reduction in CSO discharges. A combination pipe and tank system, as was developed for the Middle and Lower Front Street planning areas, would likely have a similar cost. While a storage tank would have a lower unit cost per gallon of storage, the wastewater flows would still need to be collected and conveyed to the storage element.

Regarding street storage as source control measure, CRW has not completely eliminated its use as a wet weather management technique, though we are concerned about successful application in the City of Harrisburg. While more suburban communities with wider roads and larger front yards offer an effective storage profile, our circumstances are limited by very narrow streets with homes built within feet of sidewalks creating a high risk of home (basement) flooding, if we back up stormwater against building foundations. The City has also made historical practice of overlaying pavement without first milling the old wearing course, so it is common to see curb reveal of two inches or less as opposed to the eight-inch curbs you might expect. An additional complication to this control measure is the need to coordinate its application with the City of Harrisburg. The City owns and maintains streets, and their priority is public safety as it relates to flooding or freezing of stored water on the surface of their facilities. As of now, CRW envisions green and gray stormwater infrastructure measures – not on-street storage - to manage more frequent, typical year level rainfall intensities with the potential of street storage techniques to assist in managing larger, less frequent flooding.

#### **Specific Comment 7:**

*PG has not yet reviewed the cost information for the following potential CSO abatement components, since these components do not appear to major elements in CRW's preferred "Local Storage Strategy." However, the base cost data for these estimates may be outdated as indicated in the following:*

- **SECTION 2.3.6 Pump Stations:** *Per Figures 2.3.6-1 and 2.3.6-2, cost source information for wet-well/dry-well and submersible pump stations dates from 1988. Per Figure 2.3.6-3, the cost source information for deep tunnel dewatering pump stations dates from 1979 through 2007.*
- **SECTION 2.3.8 Short-Bore Tunnel (Trenchless):** *Per Tables 2.8.3-1 through 2.8.3-10, tunneling costs appear to date from 2009.*
- **SECTION 2.3.11 Screening:** *Per Figure 2.3.11-1, cost source information for screening dates from 2007>2008.*
- **SECTION 2.3.12 Vortex Separation:** *Per Figure 2.3.12-1, cost source information for vortex separation dates from 2007>2008.*
- **SECTION 2.3.13 Retention Treatment Basins:** *Per Figure 2.3.13-1, cost source information for screening dates from 2007>2008.*
- **SECTION 2.3.14 High Rate Clarification:** *Per Figure 2.3.14-1, cost source information for high-rate clarification dates from 2007>2008.*



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- **SECTION 2.3.15: Disinfection:** *Per the Section text, the cost source information for chlorination/dechlorination and UV disinfection dates from 1993.*

**Specific Response 7:**

Technology cost curves were compared to project costs as part of the development of the curves for the 2009 Philadelphia LTCPU, as noted in the description of each cost curve in the Basis of Cost Opinions Appendix. The project costs were used to compare/confirm cost curves were on the order of similar projects. CRW has reviewed other basis of cost opinion documents from other regional LTCPU's and found many of the same sources have been utilized to develop costs for these technologies. Further, CRW reviewed and compared some costs to more recent regional costs. The most recent project examples include pump stations and screening facilities. See Attachment A for project cost validation points on pump stations and screening facilities. These cost points were generally within the range of the cost curves and verify the older cost information used to develop these curves is reasonable today.

Please contact me directly to discuss any question or concerns you may have.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Dave Stewart".

Dave Stewart, P.E., BCEE  
Director of Engineering  
Capital Region Water

cc: Charlotte Katzenmoyer, CEO, CRW  
Doug Keith, CFO, CRW  
Claire Maulhardt, P.L.A., CRW  
Fredric Andes, Esq.  
Terry Meenaghan, P.E., D.WRE, CDM Smith



## Attachment A

*Lancaster, PA Area Projects*

For all pump station cost estimate equations, y equals construction cost in dollars, and x equals pump station capacity in MGD.

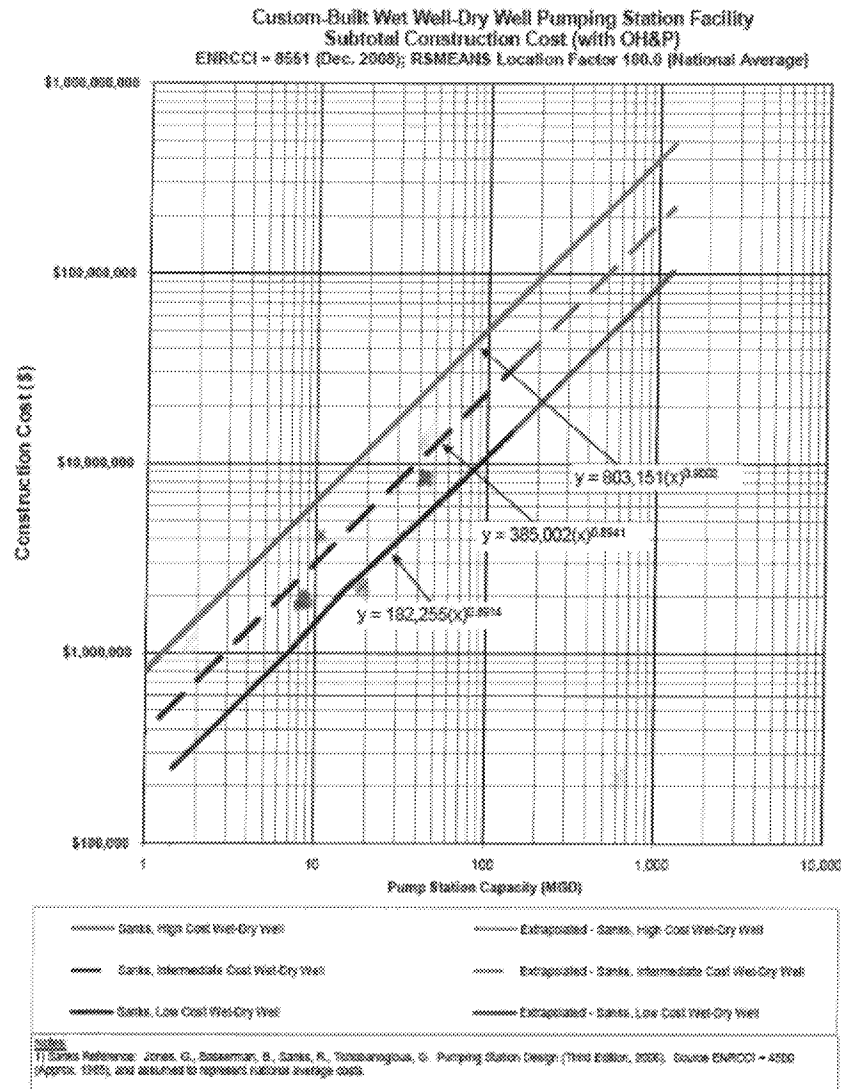


Figure 2.3.6-1: Custom-Built Wet-Well / Dry-Well Pump Station Curves [ENRCCI 8551; RS MEANS 100]

ACT Appendix 38

x Gen VFOs, New Station  
 ⊕ No Gen VFOs; Upgrade  
 ▲ Gen VFOs, Upgrade, Raise structure below grade.  
 ■ Gen VFOs, Upgrade, New Building above.

CAPITAL REGION WATER



*Lancaster, PA Area Projects*

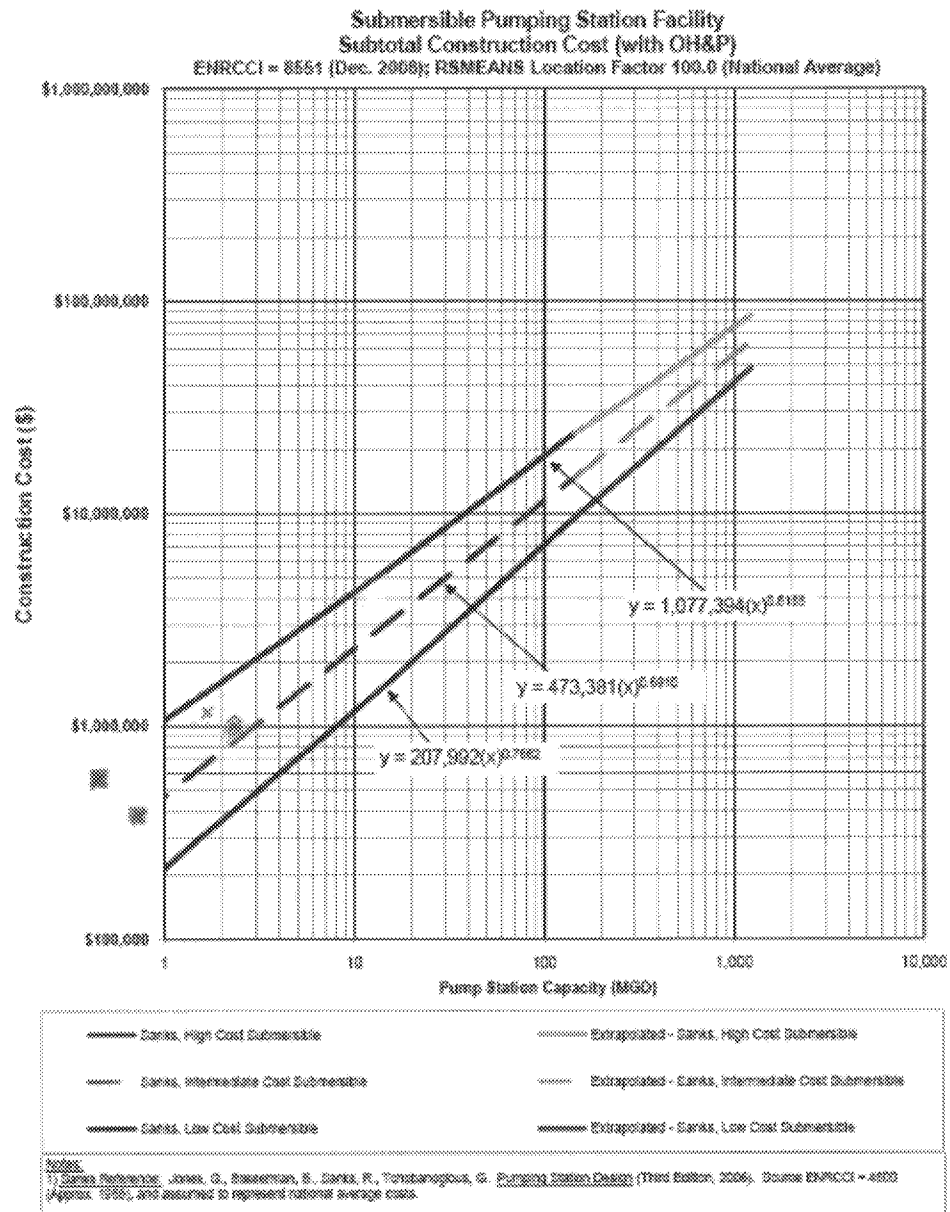


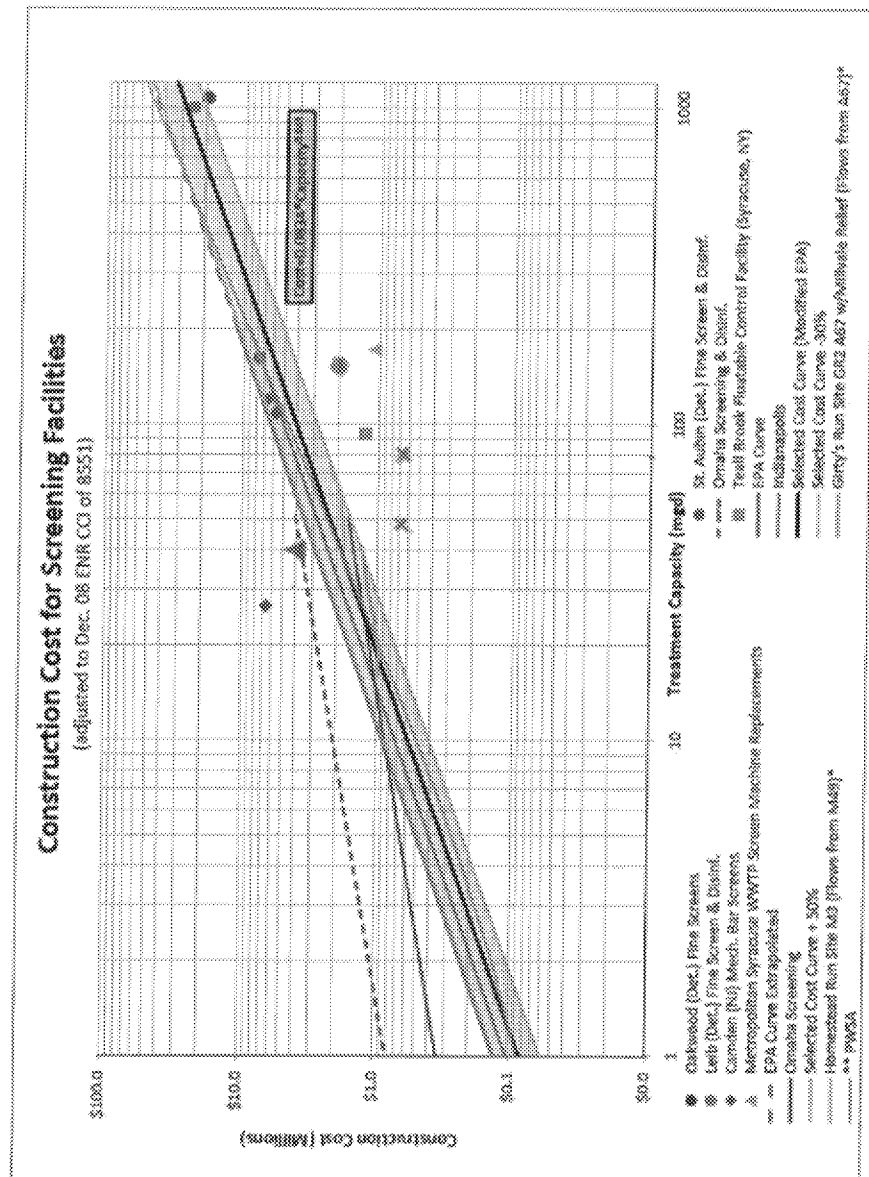
Figure 2.3.6-2: Submersible Pump Station Curves [ENRCCI 8551; RS MEANS 100]

ACT Appendix 39

X Gen. New Station  
 ⊕ Gen. Upgrade and New Building  
 ■ Gen. Upgrade

CAPITAL REGION WATER

Lancaster, PA Area Projects



**\*\* From FWSA Guide of Costs for CSO Control Technologies, March 2007**

Figure 2.311-1 Screening Facility Construction Cost Curve [ENRCC 8551; RS MEANS 100]

- X Replacement of Existing w/ no distnf.
- CSO Deflection Screen Div. changes No distnf.
- ▲ CSO Screening Bldg w/ Unit Removal. No distnf.

AC Appendix 62